AMERICAN
# Gas Journal
THE MAGAZINE OF GAS DISTRIBUTION

JULY 1961

THE UNIVERSITY OF MICHIGAN
JUL 17 1961
ENGINEERING LIBRARY

THE BRIDGE THAT BEGAN LIFE UNDERWATER . . .

# NOW MUELLER® NO-BLO®

# 2″ WELDING LINE STOPPER FITTING

## *...with O-ring Completion Plug!*

Completion plug for new 2″ Line Stopper Fitting has an O-ring to provide a positive pressure seal. Straight threads on the plug enable it to be inserted easily. Extra heavy design of fitting prevents welding distortion.

Write for further information on the new 2″ H-17125 Welding Line Stopper Fitting or the full line of Mueller No-Blo Fittings and equipment.

There's a Mueller No-Blo Fitting to match your specific needs: Sizes from ¾″ to 12″ . . . welded or mechanical joints . . . pressure ratings from 125 to 1200 p.s.i. . . . for steel, thin wall steel or cast-iron pipe.

MUELLER CO. since 1857 SERVING the Water and Gas Industries QUALITY

**MUELLER CO.**
**DECATUR, ILL.**

Factories at: Decatur, Chattanooga, Los Angeles
In Canada: Mueller, Limited, Sarnia, Ontario

GEM Sponsor

6056

# Editor's Notebook

**Dear Reader:**

*As the competitive struggle between gas and electricity grows, the no-man's land of the combination gas and electric utility will become an even more dangerous "middle ground." Is it possible to serve two masters?*

*Mr. Philip Sporn, head of American Electric Power Company, doesn't think so, apparently. Mr. Sporn told the annual meeting of the Edison Electric Institute in New York that combination companies should get out of the gas business. He declared that the electric industry should promote itself as "the single energy source" of the future . . . and he warned that the gas industry had already begun to move in this direction.*

*The electrical power industry already has an advantage in this area: Electricity can be converted to heat energy (albeit an expensive form of heat energy). It must be recognized that our modern world has many uses for electricity. To remain in the running, the gas industry MUST develop those devices — such as fuel cells, thermoelectric units, or thermionic devices — that can be fueled by gas . . . to enable more rapid development of single energy source homes and business . . . served by the gas utilities.*

*Research and development of such devices by the gas industry will be possible only if supported aggressively by gas industry leaders, backed by the gas utilities with both financial and moral support.*

*It seems only reasonable to question that utilities serving dual interests might not be willing to support wholeheartedly such a program, much less take positions in the coming all-out energy battle.*

*Perhaps the gas industry needs a few spokesmen of its own, like Mr. Sporn of American Electric Power Company — an electric utility — who are willing to call a spade a "spade" . . . and mean it.*

*— The Editors*

**Many readers have inquired if reprints of the "Park Plaza" gas turbine article that appeared in the June 1961 issue of AGJ would be available in quantities. We're pleased to inform you that they are available . . . from the Industrial and Commercial Gas Section of A.G.A., 420 Lexington Avenue, New York 17, New York. Price: 9¢ each. Reprints are 4-page, 3-color.**


# American Gas Journal®

THE MAGAZINE OF GAS DISTRIBUTION

VOLUME 188 — JULY 1961 — NUMBER 7


## MANAGEMENT & OPERATIONS


**In Atlanta, They Like Cold LPG Storage** . . . . . 26

*Atlanta Gas Light Company's Riverdale Plant pioneered low temperature LPG storage for peak shaving use; growth of the plant and details on its expansion are related by AGL's assistant chief engineer.*

**Proposed Amendments to Natural Gas Act Unfair, Unrealistic** . . 22

*Gas companies want to settle rate cases promptly; delay in decision-making, and piling-up of rate cases is result of FPC's inability to handle its workload and the solution must be found in improving FPC's operations.*


## CONSTRUCTION


**The Bridge That Began Life Underwater** . . . . . 30

*Michigan Consolidated engineers thought delivery of gas to Zug Island would be simple; the complications they faced and how they ultimately solved the problem are told in detail.*

**New Tool for Tapping, Plugging, and Completing** . . . . . 34

*Newly developed machine, simple and lightweight, does many jobs with simplicity and ease.*

**Distribution Developments** . . . . . 42

*News about planned and proposed construction projects in the gas distribution industry.*


## CORROSION


**Corrosion Clinic: Question and Answer Session** . . . . . 38

*Readers' questions get searching analysis in new "clinic"; inquiries from readers solicited as service to industry.*


## UTILIZATION


**Gas Invades the Golf Course** . . . . . 36

*Gas-fired refrigerated drinking fountain developed and tested by Lone Star Gas Company researchers for use on golf courses where other power sources are impractical and unavailable.*

**Phoenix Church Uses New A/C Units**

*Quiet as a church mouse, new single package heating/cooling units prove advantages of economical gas-fired equipment in Arizona.*


## FEATURES


**MCF-News Hilites:** *Top electrical industry spokesman says combination companies should get out of the gas business* . . . . 3

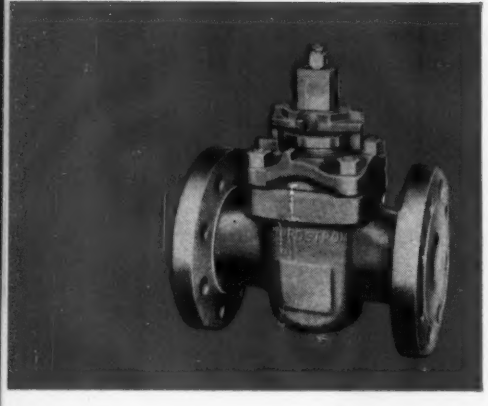
**Men At Work:** *Promotions and transfers for people you know* . . . . . 16

**Newsreel:** *News items of interest to gas distribution men* . . . . . 46

**Product Parade:** *New equipment to help you do your job better* . . . . . 47

**Professional Directory:** *Guide to engineering and consulting services* . . 52

**Advertisers' Index:** *Your "buying guide" to quality suppliers* . . . . . 51



***seals tight:*** Let's get basic: The prime function of a valve is to shut off a line. And Rockwell-Nordstrom valves do this job better than any other valve on the market. They live longer, too, saving you money every year in valve replacement. The cost? No more than ordinary valves. Write for complete information.

ROCKWELL-Nordstrom VALVES
another fine product by
**ROCKWELL**

**Write to:**
**Rockwell Manufacturing Company**
**103G N. Lexington Ave.,**
**Pittsburgh 8, Pa.**
**Canadian Valve Licensee:**
**Peacock Brothers, Ltd.**
**Box 1040, Montreal, Quebec**
**Rockwell International, S.A.**
**81 Rue de la Servette**
**Geneva, Switzerland**

**Please send me Bulletin V-217.**

Name_____

Company_____

Street_____

City_____ Zone___ State___

**Dean Hale**
Editor
**Pat Lear**
Assistant Editor
**Ernestine Adams**
Economics and Management Editor
**E. E. Holmes, Jr.**
Washington Editor
**Lynn Patton**
Editorial Production Manager
**Janis Page**
Editorial Assistant
**Donald D. Fickert**
Presentation Editor
**Carol Neaves, J. A. Kornfeld, H. C. Van Nouhuys**
Contributing Editors

•

**Joe B. Woods**
President and Publisher
**Abbott Sparks**
Vice President and Advertising Director
**E. V. Perkins**
Vice President and Western Manager
**J. E. Kastrop**
Administrative Editor
**L. H. Johnston**
Secretary-Treasurer
**Roland D. Carpenter**
Controller

•

**Allen K. Tyler**
Production Manager
**Jack H. Selby**
Assistant Production Manager
**Glen D. Hebert**
Advertiser Services Manager
**Sherwood R. Entwistle**
Circulation Director
**Royal Courtney**
Circulation Manager
**Harold L. Seamans**
Circulation Field Service Manager

•

**NEW YORK:** **John L. McDonald, Lansing T. Dupree**
*52 Vanderbilt Ave., MUrray Hill 6-7232*
**CHICAGO:** **E. V. Perkins, Charles McKean**
*53 West Jackson Blvd., HArrison 7-6883*
**LOS ANGELES:** **Richard P. McKey, Bruce Berkey**
*465 Converse Place, Pasadena, MUrray 1-0685*
**CLEVELAND:** **Paul J. Mansfield**
*Room 1510, Williamson Bldg., TOwer 1-4231*
**BIRMINGHAM:** **Fred W. Smith**
*1201 Forest View Lane, Vesthaven, 822-3804*
**HOUSTON:** **Jess Adkins**
*2370 Rice Blvd., Room 110, JAckson 6-2631*
**DALLAS:** **Ed Sealey**
*800 Davis Bldg., RIverside 8-4403*
**UNITED KINGDOM** **Kenneth S. Brooks**
*10 Gilbert Place, London, W.C.I.*
**WESTERN GERMANY - HOLLAND**
*Lohernockenstrasse 18,* **Norbert Woelfl**
*Ennepetal-Voerde, Germany*

Cable Address: PEPUB

Member Audit Bureau of Circulation and Associated Business Publications. Subscription Rates: U. S. and Canada $3.00 per year; $5.00 two years; $6.00 three years. South America and Foreign $5.00 per year. Single copies, $1.00 except August 15 Handbook issue not sold separately. Send subscription correspondence and change of address to American Gas Journal, P. O. Box 1589, Dallas 21, Texas. Subscribers should notify publisher promptly of any change of address, giving old as well as new address, including city postal delivery zone, if any. If possible, enclose address label from recent issue of magazine. Allow one month for change to become effective. Printed in U.S.A.

# M C F

## NEWS HILITES OF THE INDUSTRY

**Combination gas and electric companies should get out of the gas business,** declared Philip Sporn, president of the American Electric Power Company, speaking at the Edison Electric Institute's annual convention in New York City. Sporn said the electric power industry should strive to establish itself as "the single energy source." *Quoting an article on natural gas fuel cells for power generation that appeared in the May 1961 issue of AMERICAN GAS JOURNAL, he warned that the gas industry had already embarked on such a program . . .* and that the natural gas fuel cell could eventually provide electricity right in homes and factories . . . at costs significantly less than those charged by the electric power companies.

**Northern Illinois Gas Company plans to produce its own electric power for two of its new office buildings.** Nucleus of the "all gas" systems to provide electricity, heating, cooling, and lighting will be gas turbine driven generators that will produce high-frequency power for lighting. Exhaust heat from the turbines will be utilized for heating and cooling of the buildings. First installation to go in operation will be at NI-Gas' West Central headquarters building in Glen Ellyn, Illinois, slated for opening in early 1962. The second system will be installed in the company's new general office building near Aurora, scheduled for occupancy in early 1963. The two systems are expected to help open up new markets for gas in the "total energy utilization" concept. A few similar installations are in operation, such as Little Rock's Park Plaza *(see AGJ, June 1961, page 24).*

**Hearings on S. 666 — the "natural gas bill" sponsored by the National Association of Railroad and Utility Commissioners** — continued through June with little evidence of support for the measure except from NARUC — and that group is split 2 for to 1 against. The bill would prohibit "pyramiding" of rate cases before the FPC. The NARUC majority's testimony before the Senate committee was more of a complaint against increased gas costs than anything. FPC Chairman Kuykendall testified that the FPC thought the bill unnecessary . . . the FPC does not support the bill, contrary to some press reports. Ed Parkes, president of United Gas Corporation and A.G.A. spokesman said A.G.A. was also concerned over the backlog of cases before the FPC and delays in disposing of them, but felt that S.666 would not be the answer . . . to "solve the (regulatory) problem by inhibiting filing for rate relief is to attack the results, not the cause," said Parkes. Also testifying for the gas industry were W. M. Elmer, president of Texas Gas Transmission Corporation and INGAA spokesman, John W. Partridge of The Columbia Gas System, Inc., and Knowles Davis of Tennessee Gas Transmission Company. Oil industry groups, through their spokesman Clayton Orn, general attorney of Ohio Oil Company, also opposed the bill. "Chaos" would follow enactment of any such bill as S.666 said Orn. Significantly, not one gas distributor has appeared to support the bill.

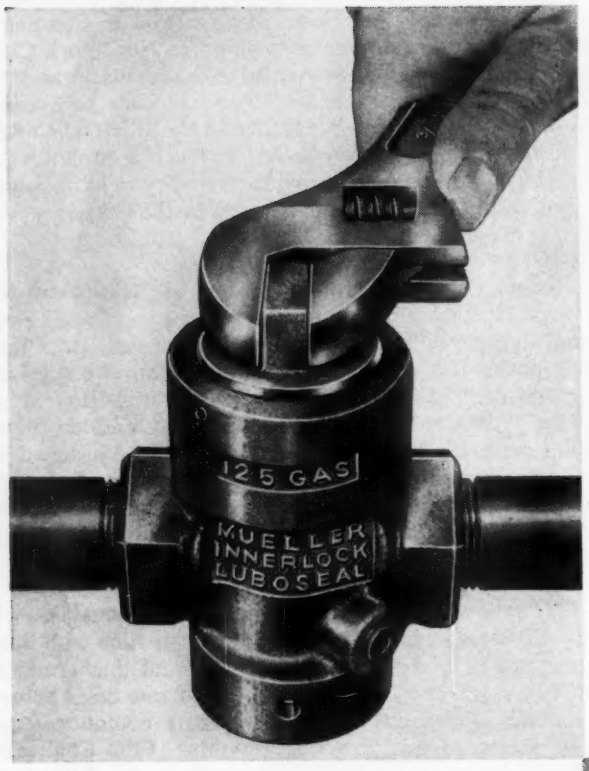
**Two new FPCommissioners have been confirmed by the Senate.** They are Howard V. Morgan, former member of the Oregon state legislature and a former member of that state's Public utilities commission, and Joseph C. Swidler, of Nashville, Tennessee, former general counsel of the Tennessee Valley Authority. Neither of the two new commissioners has experience in the natural gas field.

**"Omnibus" gas bill introduced by Rep. Oren Harris** (D-Ark.) on June 8 covers many areas. The bill contains provisions from earlier Harris bills, plus proposals from the Kennedy administration and from the FPC. Included:

. . . elimination of utility-type "cost of sevice" regulation of gas producers.
. . . establishment of "commodity" prices for natural gas.
. . . establishment of FPC jurisdiction over direct industrial sales.
. . . exempt small producers (less than 2 billion cu ft annual sales) from regulation.
. . . prohibit pipeline companies (but not producers) from "pyramiding" gas rate increases before FPC takes action on initial rate cases.

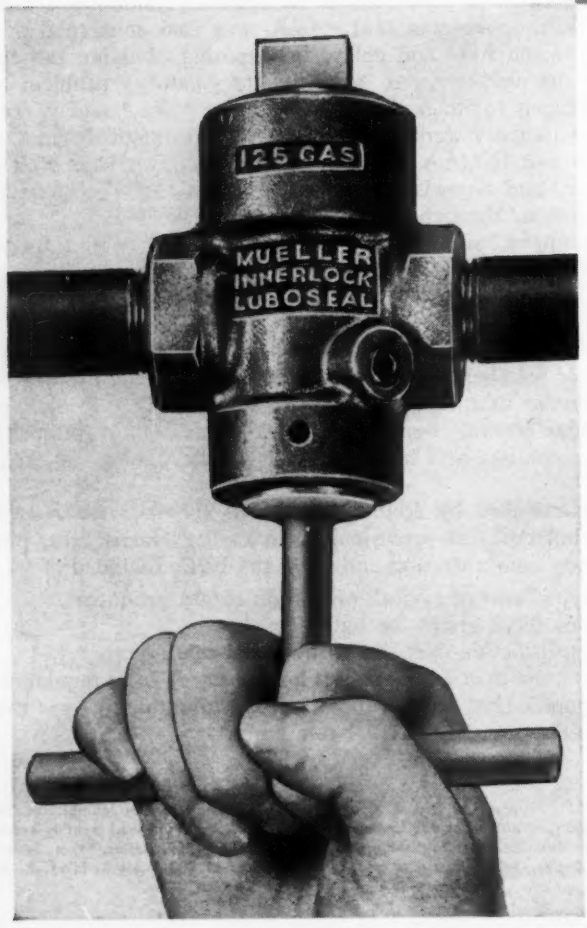
AMERICAN GAS JOURNAL, July, 1961, Volume 188, No. 7. Copyright © 1961 American Gas Journal, Inc. No part of this publication may be reproduced without express permission of the publisher. Published monthly except August then semi-monthly by The Petroleum Engineer Publishing Company, P. O. Box 1589, Dallas, Texas. Second class mail privileges authorized at Dallas, Texas. Executive and Editorial offices at 800 Davis Building, P. O. Box 1589, Dallas 21, Texas.

# *now, positive control of home service turn-ons ...the*



## *anybody turns it off*

The customer can quickly and easily turn this stop off with a common wrench. But he cannot turn it on with any tool normally found in the home. This unique stop simply and effectively prevents the customer from creating a dangerous situation in the home.



## *Gas company turns it on*

When the gas company employee knows it is safe to do so, he quickly restores service with a special wrench available only to the gas company. Opening the stop automatically resets the stop for future shut-off use.

# NEW MUELLER® INNERLOCK

## *another* LubOseal® *gas meter stop*

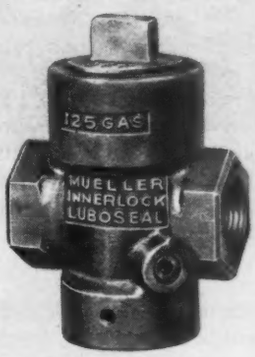
■ You can be certain that you are installing an absolutely safe gas stop when you install a Mueller LubOseal stop. The many advanced features found in all LubOseals assure you that many years from now it will be just as safe and dependable as it is today.

**GAS TIGHT** – O-ring seals at top and bottom of key absolutely prevent leakage to the atmosphere. Precisely ground key is lapped into body to prevent leakage through port. False ports in key and body protect generous sealing surfaces.

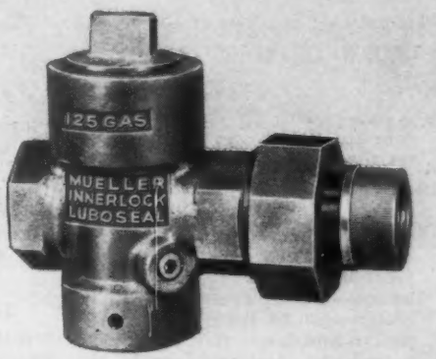
**EASY TURNING** – Four vertical grooves in key distribute grease over *all* sealing surfaces each time stop is turned off or on. Grease is stored under pressure by O-rings for perfect lubrication over long periods. Independent port permits easy relubrication of entire stop.

**FULLY TESTED** – Each stop is individually tested before shipping in both "off" and "on" position by submerging in non-corrosive liquid and applying 125 p.s.i. air pressure.

Iron Body—Bronze Key
Straight Way
Flat Head
Tamperproof
Working Pressure to 125 p.s.i.
Size—¾" only




**H-11190 Innerlock LubOseal Stop**
Inlet: Inside I.P. Thread
Outlet: Inside I.P. Thread




**H-11191 Innerlock LubOseal Stop**
Inlet: Inside I.P. Thread
Outlet: Insulating Union

*Write for complete information and specifications.*

GEM Sponsor

NO-BLO®

MUELLER CO. Since 1857 SERVING the Water and Gas Industries QUALITY

6233

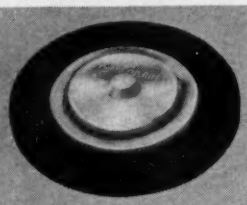
**MUELLER CO.**
**DECATUR, ILL.**

Factories at: Decatur, Chattanooga, Los Angeles
In Canada: Mueller, Limited, Sarnia, Ontario

# NEW improved gas meter parts

FROM Sprague®

• LAST LONGER
• WORK BETTER



**EXTRA LONG WEARING DELRITE VALVE COVER**

New design, new materials and new one piece DELRIN dome combine to give you more rigidity, eliminate chipping and breakage potential. Lighter weight reduces friction to a minimum. Result — LONGER SUSTAINED ACCURACY!

(a)

(b)

**INDEX DRIVING MOVEMENT WITH PERMANENT, LEAKPROOF SEAL**

*Two* new money saving features!

(a) *Nylon worm & gear* with *lubricated bronze bearing* on shaft reduces friction to absolute minimum, extends life, and eliminates wear.

(b) *Unique new Delrin Packing Unit* (Stuffing Box). One piece unit saves on maintenance—is simpler and more economical to install. New design and fewer parts give permanent, leakproof sealing ability over a greater range of pressures.

Keep the accuracy you bought, and modernize as you maintain! For details on these and other reliable Sprague parts ask your Sprague representative or write to us.

Buy only Genuine Ⓢ Sprague Parts.
P1

THE Sprague® METER COMPANY
BRIDGEPORT 1, CONN.


*Continued from page 3.*

# MCF NEWS HILITES OF THE INDUSTRY

**Definitely on the warpath** in the struggle for the home appliance load, the gas industry is now quite literally looking for scalps — *to dry* — with a new home hair dryer attachment that snaps on Norge's 1962 automatic gas-fired clothes dryer. Weighing only 11 lb., the gas hair dryer comes in 3 parts and snaps over the clothes port of any Norge dryer. A professional-type hood fits easily over pin curls and rollers, is adjustable to individual height. Heat can be adjusted by dryer's temperature controls. One of the applications envisioned will be to dry children's hair quickly, thus avoiding chilling and colds from wet hair . . . *(And, think of the gas load it will build! Ed.)*

**Gas distribution company stock prices reached a record high** of $60.38 a share in May, and closed the month at $59.56 — 44% above the closing price a year earlier, reports the A.G.A. Dividends rose to $1.92 a share, 6.7% higher than last May, for a yield equal to 3.2%. Transmission company stocks ended the month at $64.99 a share, up 14.3% above May 1960, with dividends at $2.81 for a yield equal to 4.4%.

**Deadline for entering the 5th annual Public Relations Achievement Awards competition** sponsored by A.G.A. under the PAR Public Information Program is July 15; actual entries must be submitted by August 15. This year's competition has streamlined rules, emphasizing fact that elaborate presentations are not needed.

**Interior Secretary Udall** has climbed aboard the "national fuels policy study" bandwagon, urging the Senate to authorize a special national fuel and energy study to make sure the U.S. does not face an "energy gap." Sen. Jennings Randolph (D-W. Va.) said Congress is gambling with the country's future by not determining the "true, unbiased, realistic picture" of the nation's energy status. Sen. Henry M. Jackson (D-Wash.) cautioned against getting involved in a "wild goose chase" and hinted that Randolph's proposal was motivated by "what to do about the coal industry".

**Con-Ed — Brooklyn Union Merger?** At Consolidated Edison Company of New York's recent shareholder's meeting, chairman H. C. Forbes was queried on the possibility of such a merger. "We have no merger under discussion with any company at the present moment," he replied.

**Gas air conditioning customers in Philadelphia** served by the Philadelphia Gas Works will receive reduced rates effective July 6. Residential rates will be cut by one-third and commercial and industrial rates by one-half during the four warmest months of the year. The rate reduction, approved by the Philadelphia city gas commission, is an attempt to help balance summer and winter gas usage, and to make gas more competitive with other sources of power used for air conditioning.

**Gas from the Sahara Desert** will be imported into the United Kingdom, under terms of an agreement between Conch International Methane, Ltd., Great Britain's Gas Council, and a group of French companies operating in the Sahara. The gas will be transported by special tankers after liquefaction at Arzew near Oran in North Africa.

**Eight U. S. gas men will tour the Russian** gas industry during July, in the first phase of an exchange visit between the two nations, under a 1959 agreement. In the U. S. delegation are E. H. Smoker, president of United Gas Improvement Co.; H. A. "Tex" Eddins, president of Oklahoma Natural Gas Co.; Baxter D. Goodrich, senior vice president, Texas Eastern Transmission Corp.; Fred W. Batten, vice president, The Columbia Gas System, Inc.; Robert B. Stewart, vice president, natural gas department, Phillips Petroleum Co.; Paul W. Kraemer, vice president, Minneapolis Gas Co.; Samuel J. Cunningham, senior research engineer, A.G.A., and William R. Connole, Washington attorney and former FPC commissioner.

On jobs in Beaumont and Orange, Texas, installing pipe from 8" to 16", Pearson & McCurley's 774 with 5½-ft. wheel dug up to 2,500-ft. daily in tough gulf coast gumbo. "Has plenty of reserve to dig far beyond our daily needs," says Mr. McCurley.

Rubber-tired or crawler mounted Barber-Greene Vertical Boom Ditchers cut lowest cost trench from 5½" to 24" wide and to 7' deep. Model 705-B, shown digs to 4'8" deep.

*Manufacturer of the only modern ditcher line*

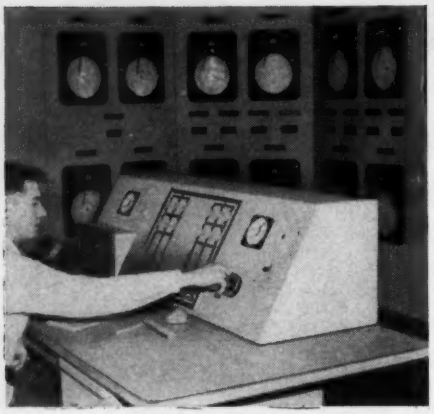
Representatives in Principal Cities of the World

**Barber-Greene** BG

Main Office and Plant AURORA, ILLINOIS, U. S. A.
Other Plants: DeKalb, Milwaukee, Detroit, Canada, England, Brazil, Australia

CONVEYORS • LOADERS • DITCHERS • ASPHALT PAVING EQUIPMENT

# AUTOMATION ECONOMY

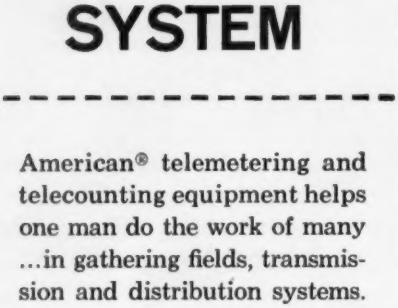


# FOR YOUR SYSTEM

American® telemetering and telecounting equipment helps one man do the work of many ...in gathering fields, transmission and distribution systems.

*One man* at a central dispatching station instantly receives accurate flow and pressure readings from remote points and adjusts for demand with remote-set controllers.

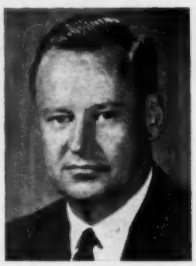
For further information consult your American representative.



American Telecounters accurately transmit Base Volume Index indications of gas quantities computed to base temperature and base pressure conditions, to central locations.

AMERICAN® METER COMPANY
INCORPORATED (ESTABLISHED 1836)
General Offices: Philadelphia 16, Pa.
Sales Offices in Principal Cities


# Men At Work



J. W. Partridge

E. M. Holwick

L. E. Schuetz

F. F. Hill

George S. Young, chairman and chief executive officer of The Columbia Gas System, Inc., has announced the election of **Cecil E. Loomis,** vice chairman, and **John W. Partridge,** president of the system's parent company. Partridge was also elected a director of the corporation. Loomis will continue as chief administrative officer. Two other officers were also advanced in rank. **Fred W. Batten** was elected senior vice president and chief operations officer, and a director of the corporation. **Francis H. Crissman** was elected senior vice president and chief financial officer.

**Everett M. Holwick** has been elected assistant comptroller of Northern Illinois Gas Co. He served as manager of rates and economic research prior to becoming the utility's budget director last year.

**Charles O. Beauchamp** has been appointed manager of gas supply of Columbia Gas System Service Corp. and will be located in Houston, Texas, gas procurement offices. He succeeds **Martin Kirk Hager,** who has resigned. Beauchamp was formerly assistant superintendent, gas and gasoline, with Texaco, Inc. in New Orleans.

Louisiana Gas Service Co., Harvey, La., has elected three vice presidents to fill newly-created posts. They are: **Charles J. Puckett,** vice president and treasurer, **H. Richard Melancon,** vice president and secretary, and **Augustus W. Durning,** vice president and chief engineer.

City Gas Co. of Florida has added two new directors — **Alexander Blumenthal,** New York attorney, and **Charles S. Roberts,** a Miami certified public accountant. At the same time **S. W. Langer,** City Gas president, also became chairman of the board, filling the vacancy created by the retirement of **Sam F. Danels.** Other directors are **M. Langer** and **S. Weiner,** both of Miami. **M. H. Kantzler** has been appointed to the post of assistant to the president.

Lone Star Gas Co. has formed an area development department to supplement existing company programs of attracting new industry to its system in Texas and Oklahoma. **John Perryman,** former sales and promotion manager of Lone Star's Dallas div. of distribution has been named director of the department. Lone Star also announced two other personnel changes recently: **Dan M. Cole** is now assistant director of personnel, and **W. Alton Allred** is manager of safety section-personnel. Cole was formerly manager, employment and supervisory training; Allred was safety engineer-personnel department.

**Lewis E. Schuetz,** vice president and general manager, Wisconsin Southern Gas Co., Inc. has been installed as vice president of the Wisconsin Utilities Association succeeding **Martin E. Juhl.**

**Francis F. Hill,** Portland attorney, has been elected a vice president and general counsel with Northwest Natural Gas Co.

**R. W. Greenleaf** has been named president of Iowa Southern Utilities Co. of Centerville, Iowa. He succeeds **H. L. Mann** who became chairman and chief executive officer. **Edward L. Shutts,** former chairman and chief executive officer, has become honorary chairman and will continue in an advisory and consulting capacity.

**Dean H. Mitchell** has been elected chairman, president, and chief executive officer of Northern Indiana Public Service Co. and **Carl D. Rees** has been elected first vice president. Rees will assist the president in management and direction of affairs of the company; he was formerly NIPSCO vice president of general operations.

Consolidated Edison Co. of New York has elected **Arthur N. Anderson** and **William C. Beattie** vice presidents. Anderson will be responsible for construction activity in the streets and for transportation throughout Con Ed's service area with exception of Staten Island. Beattie will be responsible for electric, gas and steam production facilities. **Francis A. Going,** assistant auditor since 1960, has been elected auditor of Con Ed.

**R. Alton Atkinson,** vice president of Morgan Guaranty Trust Co. of New York has been elected to the board of directors of Alaska Pipe Line Co., Anchorage.

"SORRY-NEW REGULATORY CONTROL ORDERED BY THE F.P.C."

F. H. Post

A. C. Hansen

**Frank H. Post,** vice president and general manager of Robertshaw-Fulton's Robertshaw Thermostat Division since January 1956, has been named as corporate vice president, marketing. He will have new offices at company's corporate headquarters in Richmond, Va.

**Arnold C. Hansen,** formerly assistant to the general manager of Robertshaw-Fulton's Grayson Controls Div. at Long Beach, California, has been named general manager of the company's Robertshaw Thermostat Div. at Youngwood, Pa. He is also a new assistant vice-president of the corporation.

**William M. Hunt,** partner and vice president of Putnam Management Co. and trustee of Putnam Growth Fund, has been elected to the board of directors of Peoples Gas System of Florida.

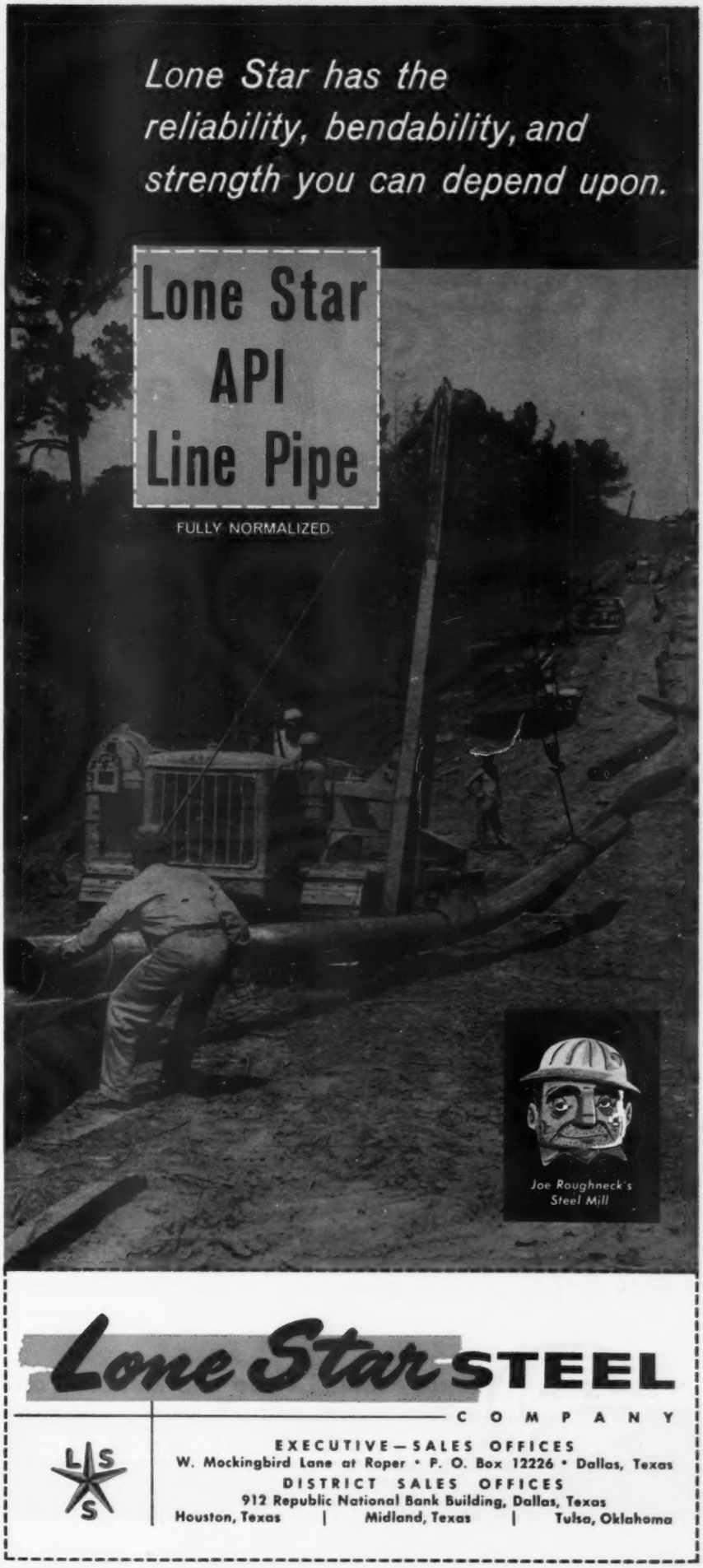
Northern Indiana Public Service Co. has announced a series of field organization appointments as part of its management seasoning and development program. **Harley W. Jenson** has been promoted to manager of NIPSCO's Fort Wayne division succeeding **Robert L. Kaade,** who becomes manager of the gas department in Elkhart. **Eugene M. Shorb** has been appointed manager of Michigan City district succeeding Jenson. **Jack W. Stine,** present Elkhart district manager, has been appointed administrative assistant to Carl D. Rees, succeeding Shorb.

Atlanta Gas Light Co. has announced the transfer of **E. B. Wilder,** Carrollton manager, to Cedartown where he will be assistant manager to **Dan Adams** and succeed Mr. Adams upon his retirement next year. **W. T. "Pete" Russell,** manager of the Rockmart office, has been named manager of Carrollton office.

**Roman L. Pijanowski,** advertising and sales promotion manager for The Peoples Natural Gas Co., has been elected a director of the Public Utilities Advertising Association.

**William F. Haley** has been appointed product manager, systems of General Apparatus Department of Union Switch & Signal, Div. of Westinghouse Air Brake Co. He was previously manager of the southwestern district office of the division in Houston, Texas.

**Frank A. Speer** has been appointed vice president and works manager for Mueller Co. of Decatur, Ill. Formerly plant manager at New Castle, Pa. plant of Crane Co., Speer will direct manufacturing operations for all Mueller Co. domestic facilities.



Lone Star has the reliability, bendability, and strength you can depend upon.
Lone Star API Line Pipe
FULLY NORMALIZED.
Joe Roughneck's Steel Mill
Lone Star STEEL COMPANY
EXECUTIVE—SALES OFFICES
W. Mockingbird Lane at Roper • P. O. Box 12226 • Dallas, Texas
DISTRICT SALES OFFICES
912 Republic National Bank Building, Dallas, Texas
Houston, Texas | Midland, Texas | Tulsa, Oklahoma

# a NEW shape*...

## * . . . for the "business end" of the Gas Business!

*In a MODERN NEW PLANT we now are producing the new* ***Arkla V-250 Gas Meter.*** *Efficient, compact and streamlined, this new meter is built for long life. Aluminum parts are specially treated against corrosion. Two coats of enamel are baked on the exterior—exclusive with the* ***Arkla V-250!***

*Tested and proven before shipping, the* ***Arkla V-250 Gas Meter*** *is ready to go to work for you at the business end of the gas business—the customer service line.*

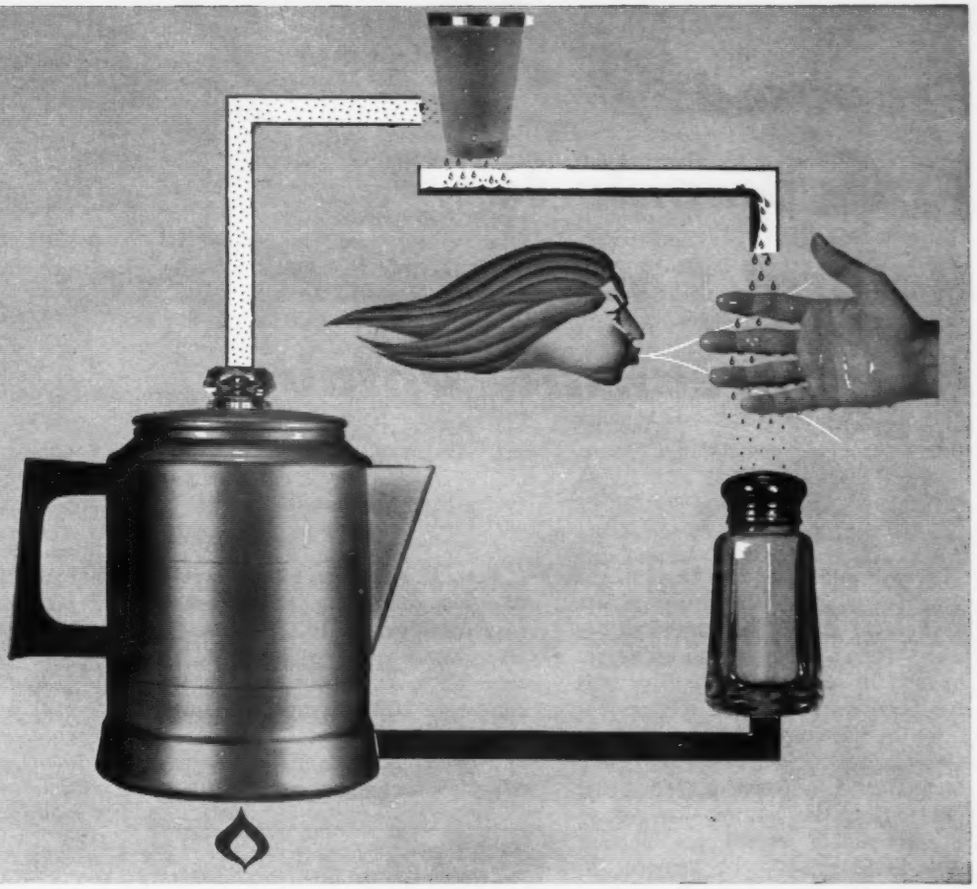
ARKLA

***ORDER ARKLA V-250 GAS METERS TODAY—****Write, wire or phone:*

**ARKLA METERS** Russellville Ark., Ph. Wisdlawn 7-

*A Division of Arkla Air Conditioning Corporation*

# How Gas Heat COOLS Your Home



Getting cold air from a gas flame combines four simple laws of nature. The Arkla-Servel Gas air conditioner uses these simple laws to give you the finest in year 'round air conditioning.

First, the **boiling-action** you see every day in your percolator serves as the engine, moving the fluid and vapor to the top of the unit. The second step is **condensation,** like that formed on a glass of cold water, converting the vapor from the percolator back to water. Next, **evaporation** provides the chilling effect . . . just as your hand feels chilled when wet. And the final step is **absorption** of the vapor by a salt solution . . . and every housewife knows salt absorbs moisture. This liquid returns to the percolator to start the cycle all over again.

This simple cycle, with **no moving parts** . . . nothing to wear out, break down or lose efficiency, will:

- Provide three to four times the life expectancy of ordinary air conditioners.
- Assure no loss of efficiency with age or operation.
- Reduce maintenance and repair bills.
- Maintain low operating cost with no increase with age or use.

Your gas company stands behind each Arkla-Servel from now on, assuring service. All these points add up to **lowest ownership cost** . . . why Arkla-Servel gas air conditioning is truly the wisest investment you will ever make for your home. If you're **remodeling or building,** call your **gas utility** or **Arkla dealer,** and get the complete story on Arkla-Servel Gas air conditioning.

ARKLA-Servel GAS AIR CONDITIONING

*the Wisest Investment you will ever make*

**ARKLA AIR CONDITIONING CORPORATION**

GENERAL SALES OFFICES: SHANNON BUILDING, LITTLE ROCK, ARKANSAS

# Proposed Amendments to Natural Gas Act Are Unrealistic, Unfair

**Cecil E. Loomis,** *Vice Chairman*
*The Columbia Gas System, Inc.*

**The pyramiding of rate cases of gas companies as a result of delays before the Federal Power Commission** has caused considerable agitation before Congress in recent months. Five bills have been introduced in the current session of Congress *(House Bills H.R. 1132, H.R. 2757, and H.R. 2781; and Senate Bills S. 666 and S. 1664)* that would amend the Natural Gas Act so as to prohibit a second rate increase from becoming effective, subject to refund, until a prior, but still pending, rate case has been settled finally.

The attention of everyone affiliated with the gas industry is directed to this legislation for two reasons:

**First** — Its enactment would be most detrimental to the gas industry generally.

**Second** — The reasons given in support of the legislation show a complete misunderstanding of the reasons for the delay in the regulatory process, or for the successive rate filings placed in effect subject to refund.

**The Natural Gas Act presently provides** that when a company needs higher rates it files such rates with the Federal Power Commission 30 days prior to the proposed effective date. The Commission is empowered under Section 4 of the Act to suspend the use of the higher rate for five months from the proposed effective date. If the commission does not complete its investigation of the proposed higher rates by the end of the five-months' suspension period, the company may as a matter of right, place the higher rates into effect, subject to refund with interest at 7 percent. The amounts collected subject to refund are contingent earnings and are so labeled on a gas corporation's financial statements.

**Few, if any, rate filings have been disposed of during the five-months' suspension period.** In some cases it has taken many years to dispose of a rate case. Thus, it happens that because of increasing costs, many companies, in order to protect themselves, have had to file and place into effect — subject to refund — second, third, fourth, and even fifth layers of increased rates. The proposed legislation would prohibit this so-called pyramiding of rate cases.

*Reduced to its simplest terms, the proposed legislation would prevent companies from recouping higher costs being experienced for long periods of time while the Commission determined the propriety of the first rate filing.*

**Our country has been, and continues to be, in an inflationary economy.** At the same time, the gas industry has been confronted with an ever-increasing demand for its product. Thus, during a period of increasing construction costs and higher labor rates, the gas industry has been required by reason of its public service obligation to spend literally billions of dollars to meet the demands of the American consumer for gas service. The result is higher costs of rendering service. These higher costs must be recouped promptly if the earnings of a gas corporation are not to deteriorate to unreasonably low levels.

Without the ability to recoup higher costs of service promptly, the gas industry would soon find itself in the position, because of poor earnings, of being unable to finance construction to meet the demands for gas service.

As indicated, the reasons given for the proposed legislation show a complete lack of understanding of the problems confronting the Commission. The sponsors of the legislation have supported it on the grounds that:

a) It would be an incentive for natural gas companies to settle their rate proceedings:

b) It would speed up the work of the Commission; and

c) It would prevent unwarranted

EDITOR'S NOTE: *Some of the most damaging legislation affecting the gas industry to ever be introduced is now being considered by Congress.*

*Initial hearings by a Senate subcommittee on proposed legislation that would ban "pyramiding" of gas rate increases began in Washington in early June. Hearings on the measure, introduced at the request of the National Association of Railroad and Utilities Commissioners, are expected to be lengthy.*

*Why the NARUC proposal is both unrealistic and unfair is pointed up in this month's Roundtable by Mr. Cecil E. Loomis, vice chairman of The Columbia Gas System, Inc. Mr. Loomis' remarks, AGJ's editors believe, accurately reflect the industry's objections to the legislative proposals.*

*Reports on testimony before the Senate group will be found in this month's MCF, page 3.*

*Urgently needed, and even more important than the public expression of the industry's views by its leaders and spokesmen, is an expression from each and every member of the gas industry — employee, stockholder, supplier, customer — to his or her Senators and Congressman, expressing opposition to this proposed legislation.*

*AGJ's editors urge you to write, wire, or call your representatives in the Congress today.*

successive increases — the real purpose of which is to finance the construction of the filing company.

**Gas companies desire to settle their rate cases promptly.** The delay in settling cases and the piling up of successive ones has not been the fault of the gas companies; the fault has been the inability of the Commission to handle its workload.

Proponents of the legislation have repeatedly stated that the natural gas companies make successive filings in order to finance construction. This charge against the natural gas companies is a fiction and has no merit. Unfortunately, by continuous repetition, this fiction is being accepted as a fact. Amounts found by the Commission to be unreasonable must be refunded together with interest at 7 percent. The fact that gas companies can borrow from banks for a short term or by sale of bonds for a long term at interest rates lower than 7 percent is proof that there is no incentive to raise capital in the manner suggested by the sponsors of the legislation.

**The cause for delay in disposing of rate proceedings before the Commission is that the workload of the Commission has increased to such an extent that the Commission cannot cope with it expeditiously or effectively.** This increased workload stems from these circumstances:

1) *The tremendous expansion of the natural gas industry during the last 15 years.* Today, in terms of plant investment, it is the fifth largest industry in the nation. The 5-man Federal Power Commission is charged with regulating this nation-wide, dynamic industry in great detail. In addition, it has other heavy responsibilities.

2) *Inflation has brought out the need for many rate increases.* The Commission has been confronted almost continuously since 1951 with a large backlog of important rate proceedings.

3) *The decision of the Supreme Court in the Phillips Case,* requiring the regulation of several thousand independent gas producers, imposed a tremendous mechanical problem and, more important, completely new regulatory problems which the Commission has not satisfactorily resolved, even as of today, seven years after the Phillips Decision.

**It is evident that some reorganization of the Commission is needed** to enable it to cope more effectively with its work-load. The recommendations for reorganization are detailed ones and cannot be given here.

**It is also evident that some legislation with respect to the regulation of the independent producer is required.** The production of gas has few characteristics associated with the usual utility businesses. This fact has made the problem of the regulation of the thousands of independent producers of gas an impossible one. It has been suggested that the so-called small producer be exempted from regulation. Even so, there would remain 250 or more large producers to regulate (or about five times the number of pipelines presently regulated). The problems of regulating these large producers on a cost of service basis would still impose an overwhelming, if not impossible workload.

**Every member of the gas industry should write, wire or talk to his Congressman and Senators promptly** and express opposition to the legislation that has been introduced (House of Representatives Bills, H.R. 1132, H.R. 2757 and H.R. 2781 and Senate Bills S. 666 and S. 1664) that would prohibit gas companies from collecting, subject to refund, a second rate increase while a previous rate increase application is still pending. * * *

**A BELL RINGER FOR SAVINGS!**

BELL CRANK ASSEMBLY
includes hex aluminum slide, bell crank of rust-resistant cold-rolled steel.

**We swapped a bell crank assembly for the famous Reynolds toggle assembly** in our Series 8010 House Service Regulator . . . And created the NR*B* 8010 as a companion to the toggle type, the NR*T*.
For real economy, the new NRB 8010 rings the bell! . . . You can't beat the *performance* of either model of the reliable Reynolds 8010!

We'll be most happy to send you complete information, take your order, and ship you a carton or a carload!

Write, or phone 644-1291.

ARKLA
**REYNOLDS GAS REGULATOR CO., INC., ANDERSON, INDIANA**
A SUBSIDIARY OF ARKANSAS LOUISIANA GAS COMPANY

# Provides trouble-free service for years

Decade after decade, cast iron pipe gets gas to where it's going—efficiently—trouble-free. Cast iron pipe rarely needs attention after installation.

It's a simple story of ruggedness.

Rugged outside: cast iron pipe withstands all the usual stresses to which underground pipe is normally subjected.

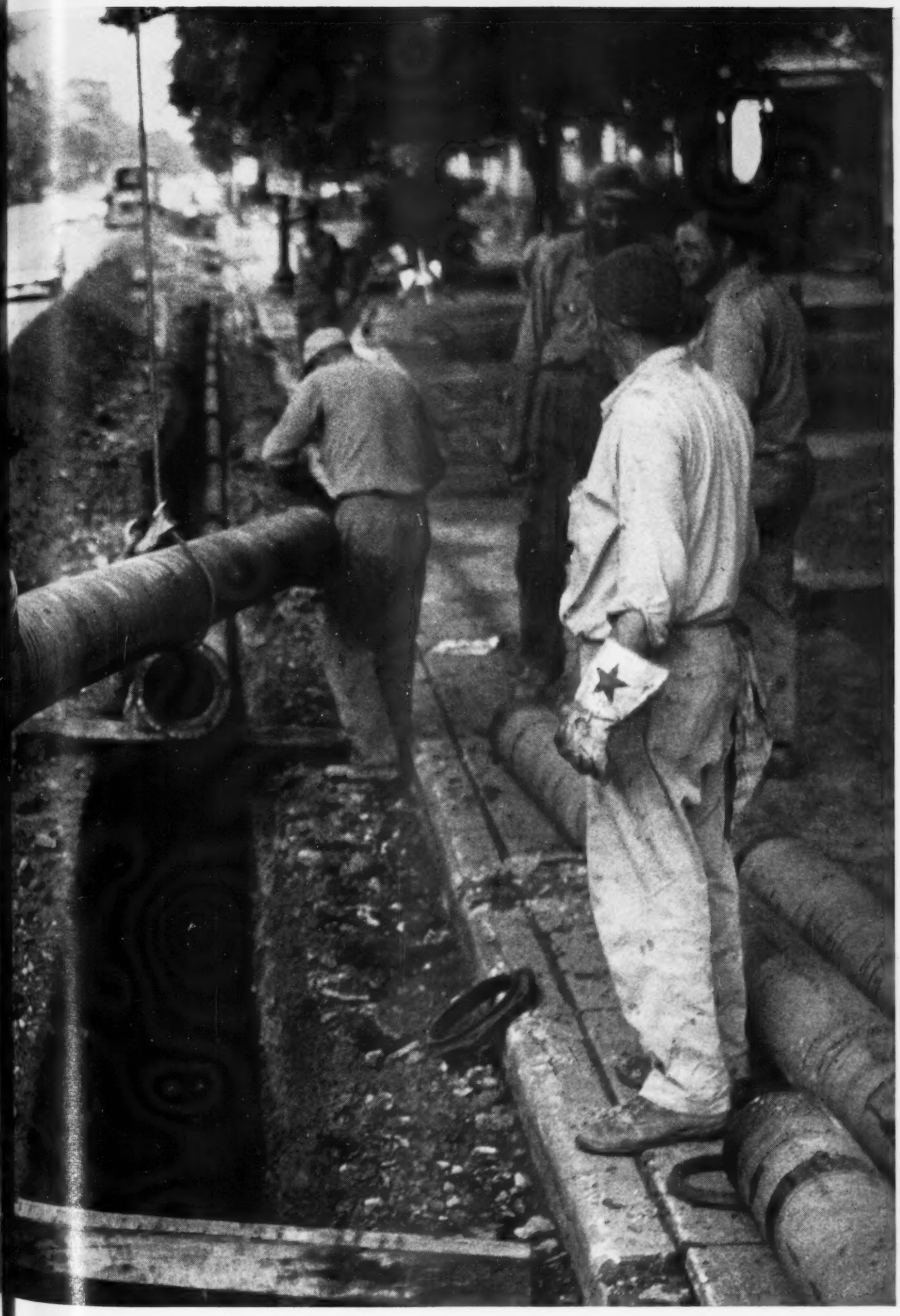
Rugged inside: bottle-tight mechanical joints remain tight under all normal distribution pressures.

And the ruggedness lasts. The cast iron gas mains you install today will still be operating when your great-grandchildren have grown up.

**CAST IRON PIPE**

THE MARK OF PIPE THAT LASTS OVER 100 YEARS

CAST IRON PIPE RESEARCH ASSOCIATION
Thos. F. Wolfe, Managing Director
3440 Prudential Plaza, Chicago 1, Illinois



# In Atlanta, They Like Cold

*Frank Bennett,* *Assistant Chief Engineer*
*Atlanta Gas Light Company, Atlanta, Georgia*

**Atlanta Gas Light Company's engineering first** — refrigerated storage of large volumes of liquid propane at atmospheric pressure — has proved its merit in four years of successful operation. During this time it has attracted attention of gas companies and petroleum engineers throughout the world. Mechanically, the performance of this unusual storage facility has been most satisfactory and anticipated economic results have been achieved.

Following the first year of operation, plans for expansion were begun and in two projects of plant additions the storage capacity has been increased to five times that of the initial installation. Other additions and modifications to the refrigeration equipment have increased the filling rate to 100 gal per min and provided faster purging of high vapor pressure gases from the stored propane.

The second addition, completed in 1960, included production facilities for increasing the mixed gas delivery pressure to 200 psig and the production rate to 3,430,000 cu ft per hr of natural gas equivalent. Propane, 6,450,000 gal, stored in five tanks at 0.5 psig and —46 F, is sufficient for 8 days of operation at this production rate.

Design, materials and construction of the additions have been the same as the original facilities except for process changes that have evolved for improvement of refrigeration efficiency and control. Each of the five tanks was fabricated from A201, grade B, aluminum-killed steel plates with butt joints full penetration welded from both sides and 100% X-rayed. The tanks have 70-ft diam cylindrical shells 40-ft high with flat bottom and domed self-supporting roof designed for a maximum internal working pressure of 1.5 psig. Stainless steel valves and alloy steel piping have been employed for all cold service piping.

Insulating material for all tanks and piping is cellular glass of various thicknesses, depending on operating temperature and line size. The storage tanks are insulated with an 8-in. layer of cellular glass underneath, a 7-in. free standing wall of the same material surrounding the shell and a 7-in. layer resting on the domed roof. An outer jacket of sheet aluminum provides a heat reflective surfact that requires no maintenance. During four years of continuous operation at —46 F no difficulty has been experienced with the

**Aerial view of Atlanta Gas Light Company's Riverdale plant** shows the two new 1,290,000-gal capacity tanks at left. Refrigeration machinery is to right of tanks. Gas-fired vaporizors are in background. Largest building is compressor house.

**Construction view** of the foundation for tank No. 5 shows, on right, steel pipe coil through which warm water is circulated to prevent freezing of the earth from the -46 F temperature of the stored propane. At left, cellular glass insulation is being placed over coil.

# LPG Storage

***Pioneer refrigerated LPG storage plant at Riverdale has been expanded to five times its original capacity; added production facilities now give Atlanta Gas Light 3430 Mcf peak shaving supply***

insulation of the original tank or piping.

### Refrigeration Equipment

Refrigeration equipment for maintaining propane pressure between 0.5 and 1.0-psig consists of a 50-hp motor-driven compressor for each tank with controls and an air-cooled condenser. Two 200-hp natural gas engine driven compressors provide additional refrigeration capacity for filling. Refrigeration machinery for the four tanks added in 1958 and 1960 includes a flash drum, operated at 50 psig, from which vapor is discharged to the compressor interstage. Condensing pressure is variable up to 275 psig controlled by releasing non-condensable gases to the purger. The liquid level in the flash drum is maintained by a float controller that releases liquid to the storage tank through the expansion valve on top of the tank.

This system of refrigeration control provides means for readily adjusting the process for variables normally encountered such as atmospheric temperature and feed stock composition. Controls for the original tank have been modified to include the same back pressure and expansion valve control system that automatically accommodates for variations in atmospheric temperature without manual adjustment.

### Purging System

The purger, in which non-condensable gases are separated from the stored propane, consists of a fractionator, a reflux condenser, and a reboiler. This purging system accomplishes complete separation of lighter hydrocarbons with minimum loss of propane. It has been necessary to remove all methane and a portion of the ethane from commercial propane in order to obtain satisfactory control of tank pressure in summer weather using only the 50-hp compressors. The two 200-hp compressors provide additional capacity whenever it is required and standby capacity in the event of a failure of any of the smaller compressors.

Tanks are protected from overpressure by two pilot operated relief valves. One valve on the tank roof is set at 1.5 psig and the other valve, in the vapor discharge piping, is set at a lower pressure. The valve having the lower setting discharges through a flare with constant burning pilot provided with remote ig-

nition located at a safe distance from the tanks.

None of these emergency measures are employed in the event of a failure of the electric power supply since the plant is equipped with a standby generator that is automatically started and energized if normal power is lost. Power is needed for condenser fans as well as compressor motors in order to operate the refrigeration system.

Valves are provided for interconnection of all tank vapor withdrawal lines and compressor suction lines so that no tank is entirely dependent on a single compressor for maintenance of pressure.

Emergency maintenance of tank pressure is a secondary use for the two 200-hp engine-driven compressors, which are provided primarily for propane filling. Increase of the filling rate to 100 gpm was accomplished by the combined effect of the addition of the second compressor and the modification to the process of flashing the liquid feed to 50 psig in a drum before admitting it to the tanks. Vapor is withdrawn from this drum to the interstage of the second large compressor with the result that a larger amount of vapor is delivered to the condenser for a given horsepower.

### Tank Filling Rate Increased

The increase in tank filling rate required a corresponding increase in the transfer rate of the 3-in. pipeline from the tank car unloading station five miles away. This was accomplished by the addition of a 50-hp LPG-fueled engine-driven, two-stage centrifugal pump at the unloading station. With this pump the line capacity is 125 gpm, a substantial increase over the 25 gpm rate of the initial installation. Anticipating possible future increase in flow rate, the line was constructed for a design operating pressure of 700 psi.

Other additions at the unloading station include nine 30,000-gal high pressure storage tanks, one 50-hp LPG-fueled engine-driven vapor compressor, and an extension of the railroad siding. With these additions there are now 11 high pressure storage tanks, three vapor compressors totaling 70-hp, and sufficient length of rail siding to accommodate 23 propane tank cars. The high pressure storage tanks are needed at the unloading station to permit continuous transfer of propane to the refrigerated tanks with intermittent receipt of propane from tank cars.

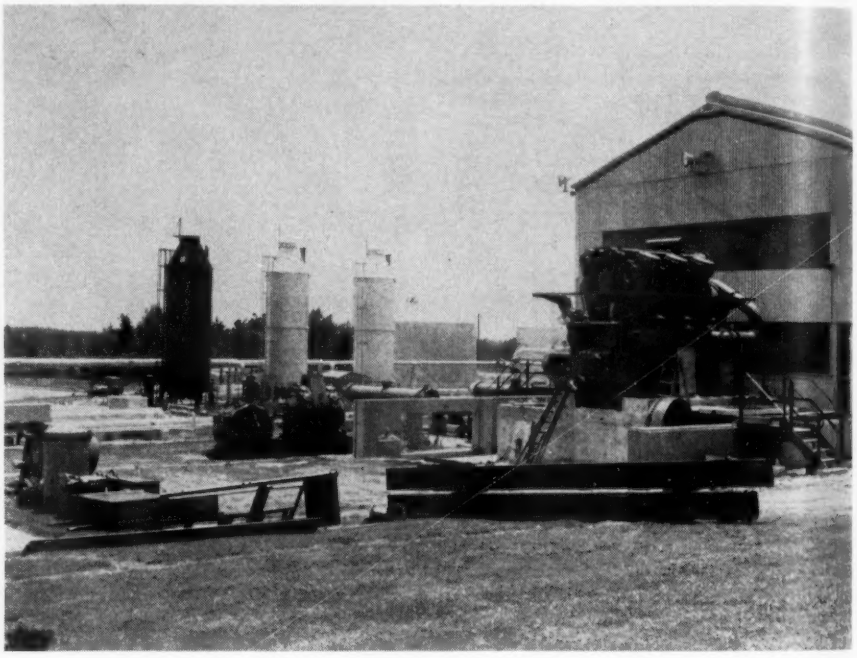
### Air Compressors

In the addition just completed, a third 1500-hp air compressor was installed for increasing the production rate to 3430 Mcf per hour of natural gas equivalent. At this time clearance pockets were added to the original two compressors to raise the sendout pressure of the plant to 200 psig. All three compressors are Cooper Bessemer Model GMWA-6, with one low stage and one high stage cylinder. Natural gas is used as engine fuel.

Remote controls on the engine governors enable the control room operator to obtain the desired volume of air delivery by adjusting the engine speed. Engine cooling is provided by heat exchangers in which engine heat is rejected to the compressor cooling water. Air cooled heat exchangers are also provided for additional cooling when required.

### Vaporization Process

Liquid propane is withdrawn from the storage tanks and delivered to the vaporizers at 250 psig by multistage centrifugal pumps. Increase of the plant delivery pressure made it necessary to install a booster pump in series with the original pumps in order to supply 660 gal of propane per minute at this pressure. Before reaching the va-



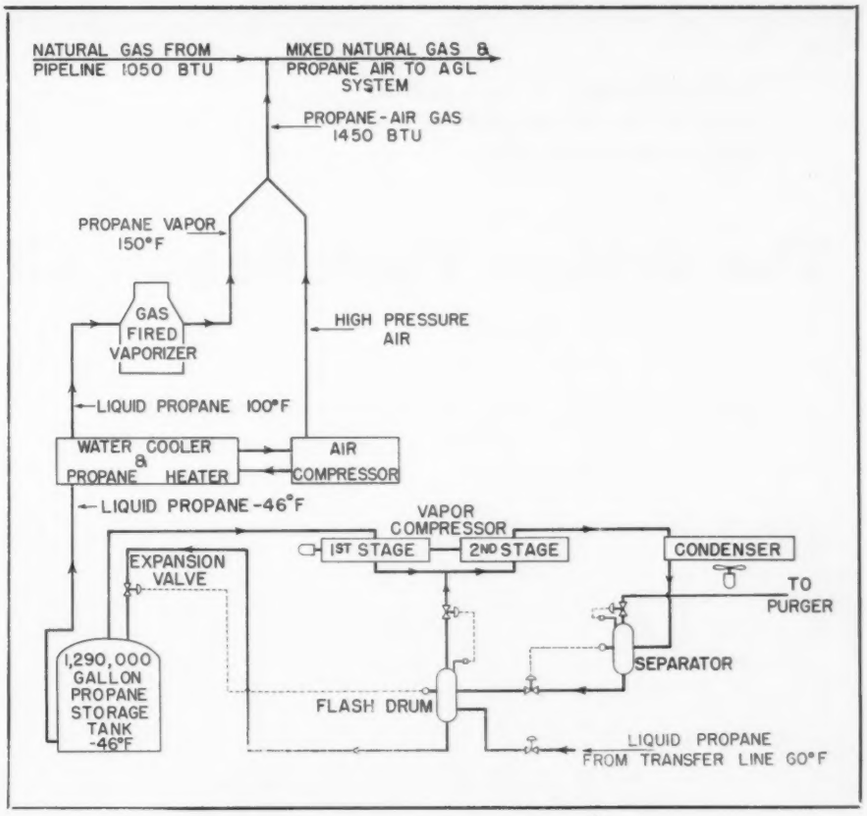
**Part of the 1960 expansion** was addition of a third gas-fired vaporizer (black one in background) and a third 1500-hp natural gas engine-driven air compressor at right. Compressor house is shown before its enlargement to include the new compressor.

**Refrigeration sheds** for the first three tanks are shown here along with the piping at left and foreground. In middle ground may be seen foundation blocks for the refrigeration machinery for the two new tanks.

porizers, the —46 F propane is preheated by heat exchangers, which also serve to cool the compressor water.

Normally, the heat transfer in this heat exchanger is sufficient for cooling of all engines and compressors. In the process, the temperature of all propane liquid is raised to 120 F and some propane is vaporized. Vapor and liquid phases are separated in a drum with vapor bypassing the vaporizers while the liquid is supplied to the vaporizers through control valves. Vaporizers are direct-fired, all-radiant type rated at 12,000,000 Btu per hour each. A third unit was added as part of the additions for production rate increase.

Production rate is controlled by manual adjustment of the engine speed as described previously and the heating value of the mixed gas is controlled by manual adjustment of the set point of a propane vapor flow controller. Output of this controller actuates the control valves on the liquid supply to the vaporizers. Firing rate to the vaporizer burners is controlled by a temperature controller with the sensing element located in the vapor outlet connection. Natural gas is used as fuel for the vaporizers.




**Flow diagram** of Atlanta Gas Light's "refrigerated" propane-air peak shaving plant at Riverdale, Georgia.

## Btu Control

Heating value of the mixture is recorded on a Cutler-Hammer calorimeter and is controlled at 1450 Btu per cu ft for normal peak shaving operation. During start-up the position of the pens on the air and propane-vapor flow recorders are maintained in the same relative position until the calorimeter response is indicated. Open flame burners are visible to the operator for checking the flame characteristics of the mixture. Rapid response of this flame provides protection against send-out of a mixture having low or high heating value, which is particularly valuable during the start-up period.

For additional protection, a Caloroptic unit with electric-to-pneumatic relay automatically releases the compressed air to atmosphere in the event the heating value of the propane-air gas drops below a set level.

With the exception of the unloading station and 3-in. transfer line, all of the engineering design and construction of the original plant and both additions have been by Stone and Webster Engineering Corporation of Boston, Massachusetts. Their process division first recognized the practicability and economic feasibility of such a project and it was on their recommendation that the plant was constructed.

Since the project was first started the plant has attracted world-wide attention. Groups of visitors have come from 14 different foreign countries, one of which has sent visitors on four occasions in groups numbering as many as six during a single visit. Some of these visitors have been instrumental in promoting similar projects in their homeland.

## Successful Pioneer

The process equipment, like the refrigerated storage, has performed satisfactorily. The investment in this plant, which now exceeds $4,000,000, has paid high returns in reduced demand charges. The 6,450,000-gal of storage capacity has required an investment of approximately one-half the cost of the same number of gallons of storage in high pressure tanks. Operating cost for electric power and labor have offset only a fraction of the savings in fixed charges that have resulted from the lower initial investment.

Although at this time mined caverns appear to offer a lower cost per barrel for propane storage than refrigerated tanks, there is no reason to doubt that the refrigerated storage system pioneered at the Atlanta Gas Light Company's Riverdale Georgia plant will maintain its place in meeting storage requirements for peak shaving of natural gas demands.

In some areas where large volume storage is required, geological conditions prevent the use of caverns and under any conditions this system offers attractive savings in investment compared to high pressure tanks in volumes too small for consideration of cavern storage. In view of the successful operation of Riverdale and similar plants by other companies it is anticipated that the future will see many more installations of refrigerated propane storage. * * *

---

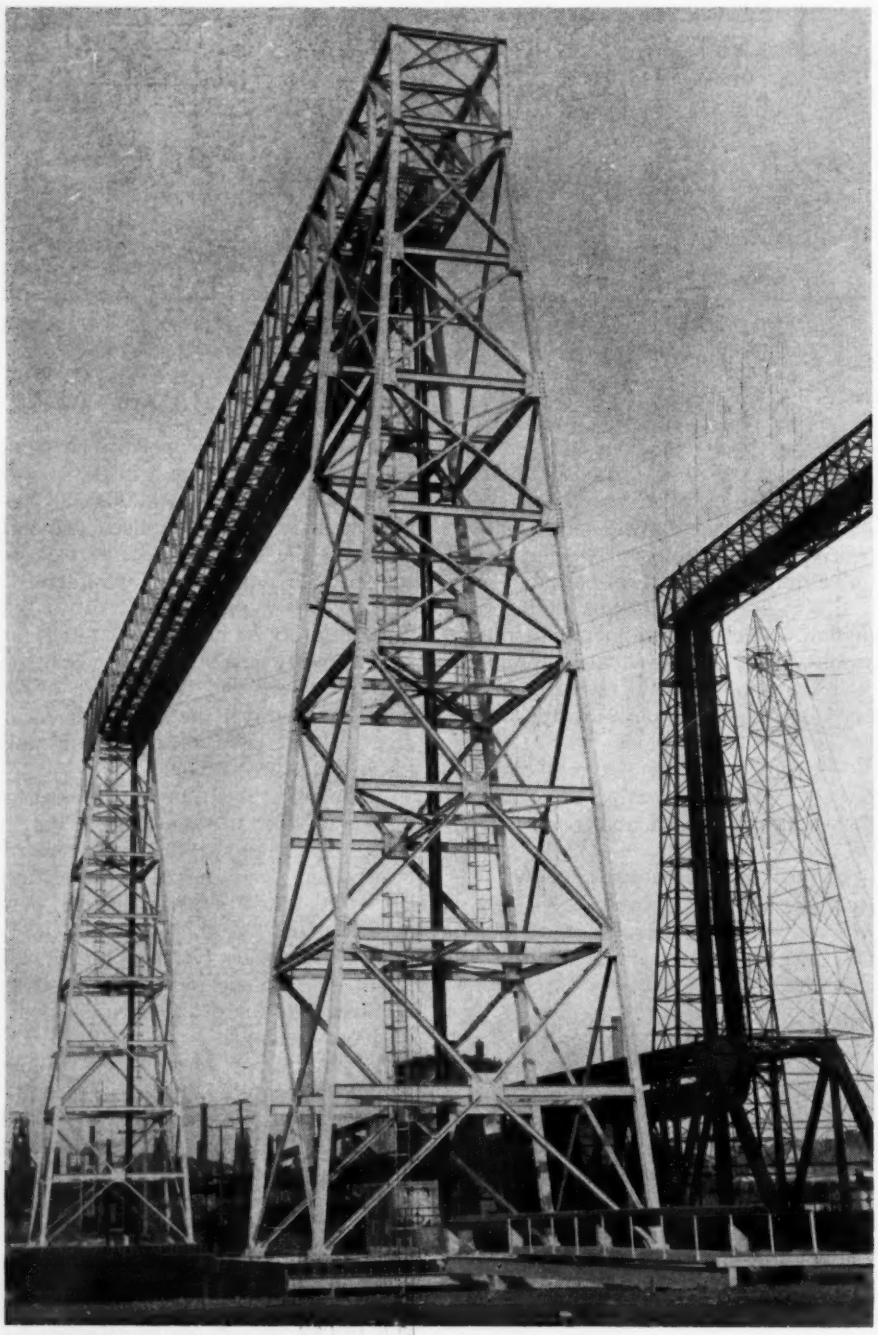

**ABOUT THE AUTHOR**

Frank Bennett, a native of Alabama, is a 1940 honor graduate of Georgia Tech, where he received his BS degree in mechanical engineering in 1940. After graduation, he joined Atlanta Gas Light Company as a junior engineer, a position he held for seven months before entering military service. During World War II, he served five years in the U. S. Navy, mostly in submarine duty in the Pacific. Separated from active duty as a lieutenant commander, he is presently a captain in the naval reserve. Returning in AGL in 1946, Bennett was promoted to division engineer in 1947 and later assistant chief engineer. In recent years much of his work has been in connection with AGL's propane plants.

***Delivering gas to Zug Island seemed simple at first; it ended up going via . . .***

# The Bridge That Began Life Underwater

**Thaddeus J. Miller,** *Senior Administrative Assistant, Street Department*
*Michigan Consolidated Gas Company, Detroit, Michigan*



**With installation of a 16-in. line,** Michigan Consolidated's pipeline bridge to Zug Island is complete. Room for additional lines as they may be required has been provided. Pipeline bridge at right is owned by Great Lakes Steel Co. and carries two large diameter lines.

*At first, it wasn't planned as a bridge, but as a conventional underwater river crossing.*

*Then, it was to be a bridge — but in a different location and of a different design.*

*Even after the location and basic design had been fixed, the engineers weren't sure how many lines the bridge was to carry.*

*Finally, just in time to meet the commitments made, all problems were resolved — the design finalized — and the bridge constructed.*

*In capsule form, this is the "saga" of Michigan Consolidated Gas Company's pipeline bridge over River Rouge Short Cut Canal to Zug Island. For those, however who do not want the "quick run-down" — for those who prefer to take a closer look — a more complete record follows:*

The Zug Island Bridge, to use the name preferred by many at Michigan Consolidated, is part of a 4½ mile, 22- and 24-in. natural gas line built to increase fuel supplies to Great Lakes Steel Corporation. The line, part of a $1,300,000 project, was designed to carry gas from the company's River Rouge Station, located in southwest Detroit to Great Lakes Steel facilities on the banks of the Detroit River.

Under the proposed agreement, Michigan Consolidated was to deliver a portion of the required gas to Great Lakes Steel facilities on Zug Island, a small, highly industrialized island at the mouth of River Rouge. This delivery naturally required the crossing of a river — or to be more exact, the crossing of the River Rouge Short Cut Canal. It was this crossing that created the problems that eventually led to the construction of the Zug Island Bridge.

## In the Beginning

During the early discussion stages — before any field investigation had been completed — everyone connected with

the project assumed that the crossing would be made in the conventional underwater way. The most promising crossing point was one directly in line with a proposed meter station on Zug Island. Logic appeared to favor both the method and the location. The canal at the proposed crossing site was only 370 ft wide and about 28 ft deep. The only problem — and this was not really considered a problem — was securing a right-of-way permit from Detroit Edison Company, which owned the land directly opposite Zug Island at the proposed crossing point.

Thus, in the winter of 1959-60, preliminary plans and drawings were prepared for the underwater crossing. A commitment to start gas deliveries by September 1, 1960 appeared reasonable.

Early in 1960, the contract for the delivery of gas was signed between Michigan Consolidated and Great Lakes Steel. Work now began in earnest. The Detroit Edison was contacted for the purpose of securing right-of-way. During one of the early discussions with them, a completely unexpected statement was made by a Detroit Edison engineer. *"It is impossible," he said "to cross the canal under water."*

### The Problem

It seems that Detroit Edison had planned an underwater cable crossing of the canal at the same point in 1954. They had even proceeded so far as to fabricate some of the pipe assemblies required for the crossing. A question of bank stability, however, led Detroit Edison to halt further work and to engage the Engineering Research Institute of the University of Michigan to investigate subsurface mass stability.

The resulting report, written by William S. Housel, professor of civil engineering at the University of Michigan, "strongly supported" Detroit Edison's decision to abandon the project. It was Prof. Housel's opinion that, in general, the banks of the canal were "already close to the acceptable limits of mass stability and any substantial deepening of the channel will precipitate slides of serious proportions."

### The Re-Appraisal

If Michigan Consolidated were to accept Prof. Housel's opinion, as Detroit Edison did, and abandon the original plan, it would have to consider one of two other available methods for crossing the canal:

1) Dig a shaft on each side of the canal to hard pan (about 85 ft below the surface) and drive a pipeline between the two shafts, or

2) Construct a pipeline bridge over the canal.

Detroit Edison had investigated the first method, but quickly decided in favor of the overhead crossings when estimates and bids indicated that the cost would have been prohibitively high. Furthermore, the eventual success of the shaft method was somewhat dubious — the risks involved were extremely great.

The same decision apparently had been reached by Great Lakes Steel previously when, in 1937, they had constructed a pipeline bridge for a 42-in. coke gas line almost adjacent to the proposed crossing. When asked why they built a bridge instead of going under the canal, their engineers replied that because of the general nature of the channel, they did not consider anything but the bridge.

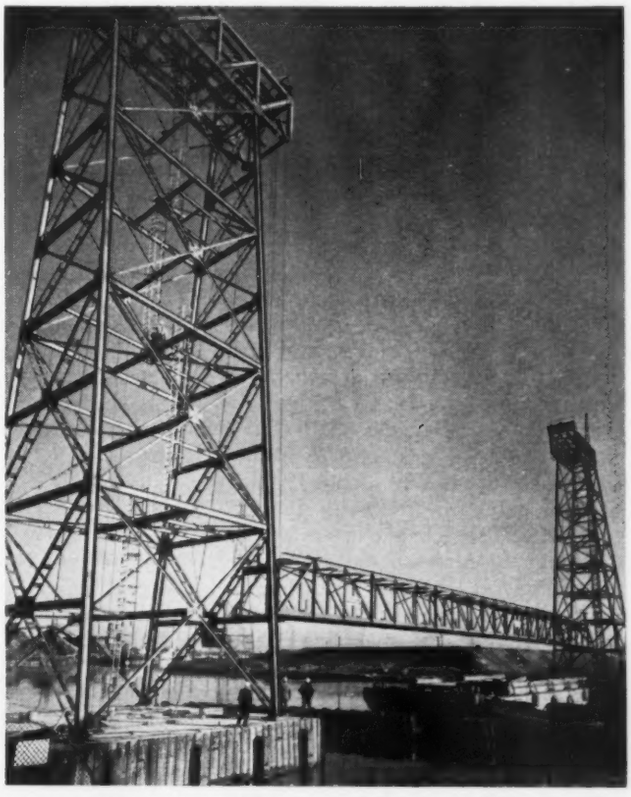
In March, only six months before D(delivery)—Day, and after much "agonizing re-appraisal," Michigan Consolidated decided in favor of a bridge at the site of the formerly proposed underground crossing. The L. E. Daigle Co., a Detroit engineering firm enjoying a good reputation in the midwest, was promptly engaged to design the bridge.

### The First Bridge

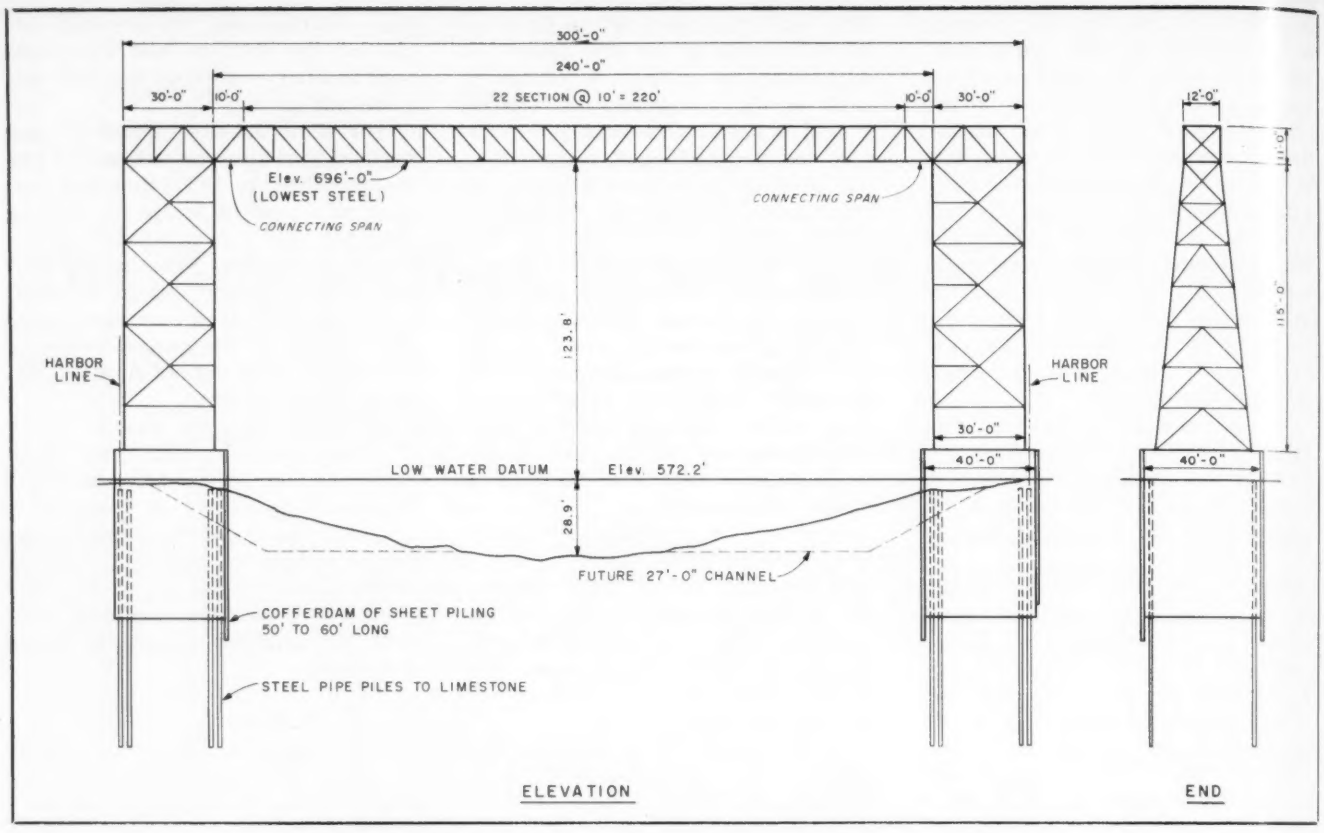
L. E. Daigle Co., after being apprised of the problems involved, proceeded with diligence to prepare preliminary drawings. By the end of April, a little more than four months before D-day, they submitted drawings for a cantilever type bridge.

This original design for the Zug Island Bridge consisted of a 240-ft midsection suspended between truss sections that were 162 ft long. Each truss

**Caisson** for the pipeline bridge has sheet steel piles driven down 90 ft to bedrock and filled with concrete to form a secure base.



**Center span** was raised into position by derricks working from behind the towers.




**Design of pipeline bridge** over the River Rouge Short Cut Canal to Zug Island.

section, acting as a huge cantilever beam, was supported by two towers 100 ft high. The towers under each truss section were spaced 90 ft apart. The distance between the inner towers, (the towers located nearest the water) was almost 385 ft.

Detroit Edison carefully reviewed the proposed bridge site and tower locations and granted tentative approval.

By May 1, the project appeared to be proceeding in an orderly fashion despite the last minute abandonment of the underwater crossing method in favor of the bridge.

## The Incident

It is appropriate to indicate at this point that the underwater crossing site, and the site of the bridge referred to above, was not the site eventually selected for the Zug Island Bridge. The original site was located about 250 ft east of a Detroit, Toledo & Ironton Railroad bridge to Zug Island. The final site was about 75 ft west of the railroad bridge. The change in site was the result of an unforeseen and, at the time, a seemingly insignificant occurrence.

On a bright spring sun in early May, a lake freighter was unloading coal at Detroit Edison docks, which were located at the site of the proposed bridge. A fresh wind, and the current, caught the freighter and drove it against the dock and into the bank. Fortunately, damages were relatively light — a portion of the dock was destroyed, but most of the force was absorbed by the relatively soft canal bank.

Unfortunately, the ship struck the bank at the point where the tower piers were to have been located. The bridge had been designed so that the inner towers were to have been located on the shore side and immediately adjacent to the Detroit Edison Coal docks. Had the pier been constructed, the ship might have been extensively damaged.

This incident resulted in some additional deliberation on the part of Detroit Edison. In due time, Michigan Consolidated was requested to redesign the bridge so that the inner tower on Detroit Edison property could be located at least 25 ft inland from the docks. These restrictions meant that the inner towers would have to be placed more than 410 ft apart. The engineering problems involved in the design of the bridge were now greater than ever.

## The New Site

In the early weeks of May, less than four months before D-Day, a series of urgent conferences were held. Their purpose — to re-evaluate the bridge design, cost, and location in the light of the new Detroit Edison request. Their result was selection of a new bridge site west of the railroad bridge.

The new site had the advantage of not being located immediately adjacent to dock areas. Furthermore, the crossing span was appreciably reduced in length. It had the disadvantage, however, of requiring new right-of-way easements and a complete re-evaluation of the engineering problems involved.

After the change of locations, work was accelerated to a feverish pace. By mid-May, a new series of drawings had been prepared. The project was again moving forward. The second complete change of plans, however, exacted its toll of sleepless nights and worry-filled days on the part of those directly concerned with the project.

## The Second Bridge

During the period from mid-May until the end of September, the second bridge design was completed, the necessary approvals and permits secured, and the bridge actually constructed. Although there were the usual, fully anticipated but, nevertheless, rather exasperating last minute minor design modifications, no further incident occurred to change the basic design of the bridge.

Detail drawings were completed by the end of June. Construction of the bridge piers began the second week of July, by Candler-Rusche, Inc., while Whitehead and Kales Company fabricated and erected the superstructure. By mid-September, the bridge was completed except for the installation of the pipe, which was installed by R. L. Coolsaet Construction Co. The bridge received its final inspection and was accepted by the engineers on October

7 — approximately one month after D-Day.

One of the last problems to be resolved with reference to the bridge design was the question of the number of pipelines the bridge was to carry. During the early conferences with Great Lakes Steel and Detroit Edison, both indicated a willingness to share the cost of the bridge if, in return, they could use a portion of it for their pipelines. Eventually, Detroit Edison decided, after a thorough survey, that it could not justify the required expenditure. Great Lakes Steel, however, accepted a "partnership." The bridge was designed therefore, so that a 24-in. Great Lakes Steel pipeline could be installed on it at some future date.

In general terms, the second, or the Zug Island Bridge, may be described as being 126 ft high, 300 ft long, and consisting of a box truss center span suspended between bridge trusses mounted on steel truss-type towers. The towers, in turn, are supported by concrete piers mounted on piles.

Except for a slight difficulty that arose during the building of the tower piers, no unusual problems were encountered during the construction of the bridge.

For the statistically minded, the following facts and figures about the bridge are offered:

### Canal Data

Canal width at the bridge site is about 310 ft (the piers are actually within the harbor line although outside the channel limits). The channel has a maximum depth of about 30 ft at the bridge site. The top surface of the pier caps is about 5 ft above the high water level.

### Basic Design Data

The bridge was designed to carry four pipelines, three walk-ways, an ice coating ½-in. thick on all surfaces, and a simultaneous wind load of 25 lb per sq ft. Without the ice coating, the bridge can resist a wind load of 35 lb per sq ft. In terms of wind velocities, a 25 lb per sq ft wind load is the force created by a 90-mph wind blowing against a plate one foot square. A 35 lb per sq ft wind load is equal to that created by a 110-mph wind acting against the same plate.

### Piles

Piles for the piers consist of 12-in. diam, ⅜-in. wall, closed end pipe. Average length of the piles is 81 ft. Use of closed end piles rather than open end piles was predicated on several factors — tests by Great Lakes Steel during the construction of their bridge in 1937, the confined area of the piers, the time element involved, and costs.

Although 10-in. diameter pipe piles could have been used under the outside bents of the towers, where the loads are light, 12-in. pipe was used throughout to provide a more conservative design. The pier design had to be conservative because it was completed before the design of the superstructure was finished.

### Piers

Each pier is supported by 18 piles. The piles are grouped at the corners of the piers — six piles in each corner on the channel side of the piers and three piles in each corner on the shore side of the piers.

Each pier is approximately 40 ft square. The width of each pier was restricted to 40 ft to provide the required clearance between the pipe bridge and the Detroit, Toledo and Ironton Railroad Bridge on the east side and to conserve the docking area of the Allied Chemical Corp. on the west side.

### Cofferdams

The cofferdams are constructed from steel sheet piling. The sheet piling is 60 ft long on the channel side and 50 ft long on the shore side. About 139 tons of sheet piling was used for each pier.

The sheet piling is longer than that used on existing bridges in the area and longer than that required by the present channel line and depth. The use of longer sheet piling was predicated, however, on the increasing use of the canal by lake ships and on the possibility of further dredging of the channel to increase its width and depth.

The area within the cofferdams was partially excavated and filled with a layer of gravel, 15 ft thick, and a layer of compacted sand, about 1½-ft thick. Over 1000 tons of gravel were used for each pier.

### Pier Caps

The pier caps consist of 40 ft by 40 ft reinforced concrete slabs ranging in thickness from 3½-ft in the corners to 2-ft in the center. Eight tons of reinforcing steel and 205 tons of concrete were used for each pier cap.

### Towers

The steel towers are anchored to the piers with four anchor bolts at each of the four tower columns. The bolts for the outside (shore-side) bents are 1½-in. diam while bolts for the inside (channel-side) bents are 2-in. diam.

Each tower is 30 ft square at the base and 30 ft by 12 ft at the top. The towers are 115 ft high and located about 240 ft apart (as measured from inside bent to inside bent).

Each tower supports a 12-ft wide by 11½-ft high by 40 ft long bridge truss section from which the center span is suspended — about 124 ft above the low water line.

### Center Span

The center span is a box truss structure, 220 ft long, consisting of 22 sections, each section being 10 ft long by 11 ft high by 12 ft wide. The center span is designed to support the existing 16-in. gas line, two future 10-in. gas lines, the future 24-in. Great Lakes Steel gas line, plus two existing and one future walk-ways. Existing and future pipelines and walk-ways are or will be placed on the bottom chord of the center span.

The center section is suspended at each end by four 1½-in. thick by 4-in. wide plate shear connections. The shear connections are designed to provide two inches of expansion at each end. The center span was fabricated on the ground and raised into place as a unit.

### Weight

Weight of the suspended center span, excluding weight of the pipe, is about 120,000 lb. A ½-in. thick ice coating on the center span adds about 20,000 lb to the weight.

Each bridge truss section (these sections support the center span) weighs about 22,000 lb.

The towers weigh approximately 120,000 lb each.

Total weight of the bridge, excluding weight of the pipe and concrete piers, is more than 400,000 lb — over 200 tons of steel.

### Cost

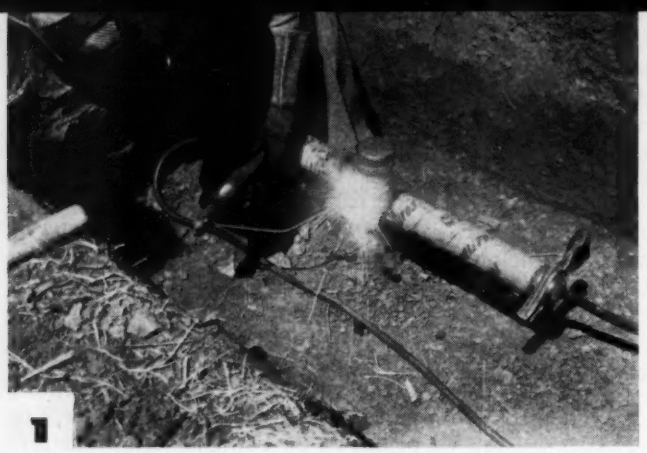
Total cost of the bridge was almost $350,000. The piers alone cost over $213,500. The fabrication and erection of the superstructure required an additional $83,000. The cost of installing the pipe was about $21,000. The remainder, about $29,000, was spent for engineering services and administrative and general costs.

### Looking Back

In retrospect, the impression retained by most of those directly connected with the project was the tremendous effort that was required to overcome, within the allotted time, the obstacles encountered. Each basic change in crossing method, location and design increased the work pressure and required a redoubling of efforts to meet commitments made.

Some five months elapsed between the tentative selection of the final site and the acceptance of the completed bridge. Virtually all of the work was done within that relatively short period of time.

*It wasn't the work — but the uncertainty as to whether the bridge would be completed in time — that created the gray hairs.* ★ ★ ★



1

2

# New Low Pressure Machine Taps, Plugs, Completes

*AGJ Staff Report*

**A new approach to plugging operations** when making hot taps on low and medium pressure gas distribution mains has been introduced by T. D. Williamson, Inc., of Tulsa, Oklahoma. The new system, shown for the first time at the A.G.A. Distribution Conference in Philadelphia, is a low pressure adaptation of the Williamson "Stopple" idea, used since 1953 on high pressure gas transmission lines.

Named the *Shortstopp* by its developers, the device is designed to work at pressures up to 60 psi, using ASA 150-lb fittings welded to the line. Sizes from 2 to 12-in. are planned. The equipment, field tested by gas utilities in all sections of the nation, can be used to isolate a section of line for repairs, extensions, replacement, or relocation of lines, all without interrupting flow.

**How it works.** Schematic drawing of the Shortstopp fitting is shown in **Fig. 7.** It consists of a shaped cast steel nipple, threaded outside with a 2-in. pipe thread, and an internal thread for the steel completion plug. The plug is fitted with an O-ring seal. A standard 2-in. pipe cap tops it off.

**Fig. 1** shows the shaped nipple being welded to the top half of the pipe. This eliminates need for a deep bellhole and saves welding time. During welding, the completion plug is removed to prevent heat damage to the O-ring seal. After the nipple is welded into place, a conventional full-opening 2-in. gate valve is installed.

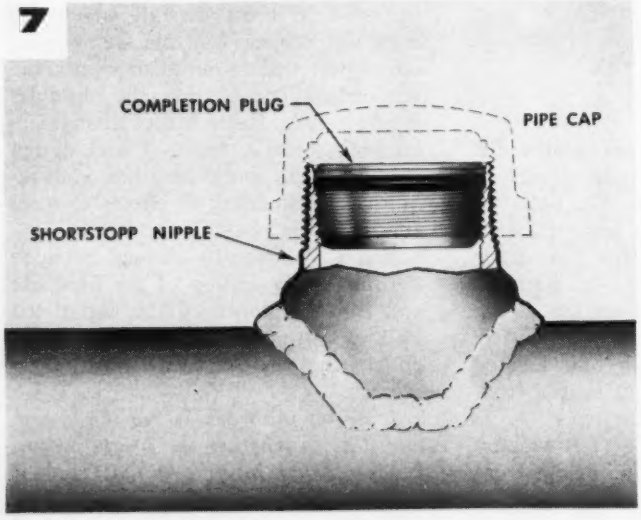
Once the valve is in place, the tap can be made, as shown in **Fig. 2.** The manually operated drilling machine, equipped with a conventional 1⅞-in. diameter hole saw, utilizes friction feed, can make the tap in 5 minutes or less. Up to 50 taps can be made before blade replacement is necessary.

After the coupon is cut from the pipe and removed, the *Shortstopp* unit is inserted. As shown in **Fig. 9,** it consists of a cast housing, a hard chrome plated operating rod, removable T-handle, and a removable sealing head. An O-ring packing is located at the top of the housing, which also has 1-in. bypass and ¼-in. vent connections.

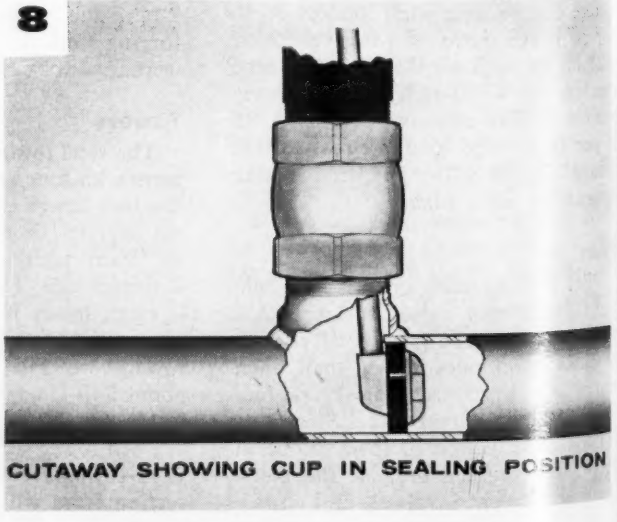
The housing is tightened in place, the valve opened, and the sealing head inserted through the tapped hole until it hits the pipe. The head is then positioned so that the nose points to the pipe to be plugged off.

By pulling back and downward on the operating bar, as

7




8



CUTAWAY SHOWING CUP IN SEALING POSITION

3

4

5

6

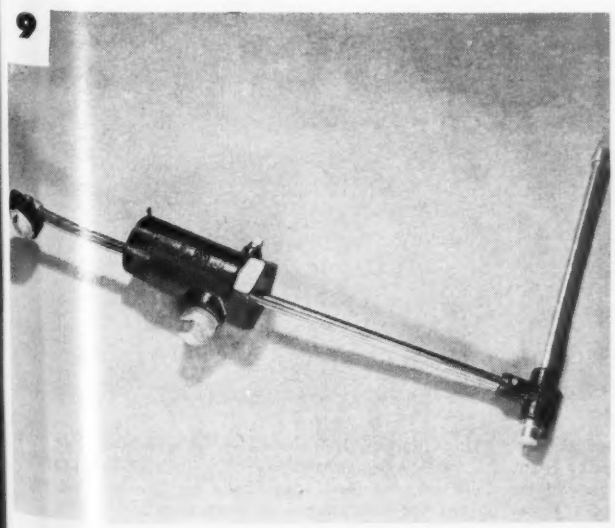
shown in **Fig. 3,** the cup is forced forward into the pipe, effecting a tight seal. The cup is soft neoprene with a tapered lip. Fig. 8 shows a cutaway of the unit with cup in sealing position.

The T-handle is removed to minimize the possibility of accidentally dumping the pressure. The end of the plugged-off main can then be cut and an extension welded in place as shown in **Fig. 4.** Heat of welding will not damage the sealing cup if the weld is kept 8-in. or more away from the fitting.

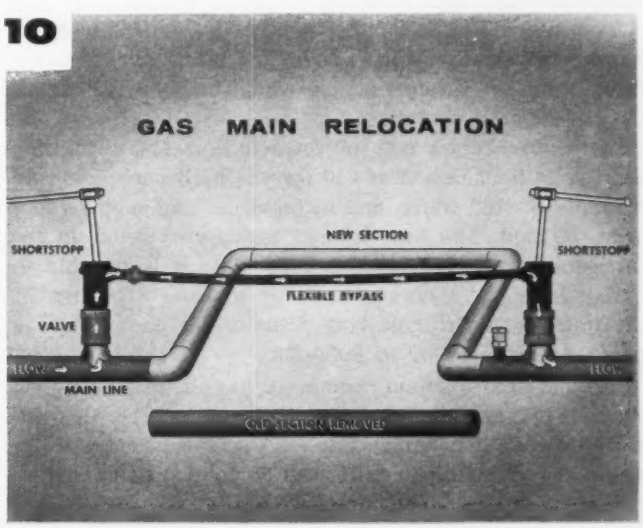
When the tie-in is complete, the seal is broken by rotating the T-handle. The sealing head is retracted by pulling up on the handle, the valve closed, and the unit removed.

The *Shortstopp* can also be converted to a completion machine by removing one bolt and replacing the sealing head with a completion plug holder. As shown in **Fig. 5,** the plug is installed on the unit, the housing mounted on the valve, the valve opened, and the plug is shoved down through the valve until the threads engage. The plug is screwed in and the O-ring seals on the nipple wall.

**Fig. 6** shows a completion plug in place. A pipe cap is then added, and the fitting is doped, ready for burial. **Fig. 10** shows how Shortstopp units can be utilized for a gas main relocation. * * *



9




10

## Oasis on the Links

# Gas Invades the Golf Course

**Thirsty golfers,** overheated on the green fairways of their local golf course, by either their own score or the humidity, may soon be offered liquid relief by a self-contained, gas-fired (LPG) refrigerated drinking fountain.

The gas-actuated fountain, developed and tested by the research and development department of Lone Star Gas Company, is now undergoing field tests at Dallas' Tenison Golf Course.

Development of the fountain, for installation where power outlets are unavailable or impractical, was spurred by a request made to Lone Star by L. B. Houston, director of Dallas parks and recreation. Houston challenged the gas company to devise a means to refresh thirsty golfers on the city's municipal links.

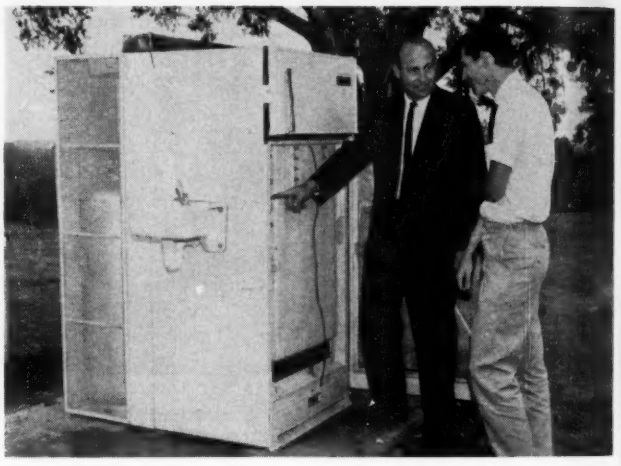
Lone Star research engineer Ed Muehlhause responded by converting a 12-ft Norge refrigerator into a prototype model of the gas-fired fountain. A large fiberglass water storage tank, designed to accommodate an ample quantity of cold water, was installed inside the refrigerator's food compartment. A set of copper coils, through which the drinking water passes under pressure, was placed in the tank's bottom. The unit's refrigeration coils first cool the water in the storage tank, which then cools the water flowing through the copper coils.

Controls keep the fountain operating between 38 and 55 F. To conserve refrigeration, a precooler takes waste water from the fountain's bubbler and runs it through the unit's heat exchange system.

Fuel system for the fountain consists of two 100-lb bottles of propane located in the rear of the refrigerator. Muehlhause estimates the fuel supply would be good for 70 full days of 24-hour operation.

If the fountain is not subjected to constant use during a given 24-hour period, it will throttle itself back, build up a supply of cold water, and increase the fuel supply's life-span, he said. The heat storage capacity of water in the refrigerator is approximately 8000 Btu. It is possible to obtain increased thermo-storage by freezing a portion of the water in the storage tank. This would permit storage of an additional 6000 to 8000 Btu.

The gas-fired fountain's prototype has already undergone rigorous indoor testing with excellent results. "But," Muehlhause notes, "the actual fate of the gas-actuated water fountain and the thirsty golfer will be decided on the battleground itself, the golf course."



Ed Muehlhause, left, Lone Star Gas Company research engineer, shows Southern Methodist University engineering student Donald Nutt inner workings of the new gas-actuated water fountain developed by Lone Star's research and development department.

Two golfers playing Tenison Golf Course in Dallas obtain cold liquid relief from the new gas-actuated water fountain. The propane-powered fountain was designed specifically for use on links where other power outlets are unavailable or impractical.

*Light* *Right*

## American® Domestic Aluminumcase Meters

*Aluminum-light* for savings in shipping, handling and setting . . . high resistance to impact damage.

*Service-right* through accurate, dependable, low-cost operation.

American's AL-175, shown above, is precision-built for dependable, economical domestic service. Light weight and rugged one-piece, die-cast aluminum construction in modern design insures customer acceptance. Quality features include molded Duramic diaphragms for all fuel gas services, self-lubricating bearings, grommet-type seals and reinforced flag rods. Accurate measurement in these A.G.A. Class 175 meters is assured from pilot registration through full-rated capacity. Rated at 175 cfh, 5 psi working pressure. Look to American for sustained accuracy at lowest cost per meter per year of service.

**AMERICAN 58-225**
For medium domestic loads. Rated at 225 cfh, 5 psi working pressure. Operates at conventional nine revolutions per cubic foot.

**AMERICAN AL-250**
For home heating and small commercial loads. Rated at 250 cfh, 5 psi working pressure. Slow speed operation . . . only 7 revolutions per cubic foot.

AMERICAN METER COMPANY

**GENERAL SALES OFFICE:** Philadelphia 16, Penna. • Albany • Atlanta • Baltimore • Birmingham • Boston • Chicago • Dallas • Denver • Houston • Kansas City • Los Angeles • Minneapolis • New York • Omaha • Pittsburgh • San Francisco • Seattle • Tulsa • Wynnewood

**IN CANADA:** Canadian Meter Company, Ltd., Milton, Ontario • Calgary • Edmonton • Montreal • Regina • Vancouver

# Corrosion Clinic: Question & Answer Session

*H. C. Van Nouhuys, Corrosion Consultant and Contributing Editor*

**Q. Why is it that, in a dry cell battery, the terminal that is negative is the one that corrodes, whereas we make a pipe negative and it is protected?**

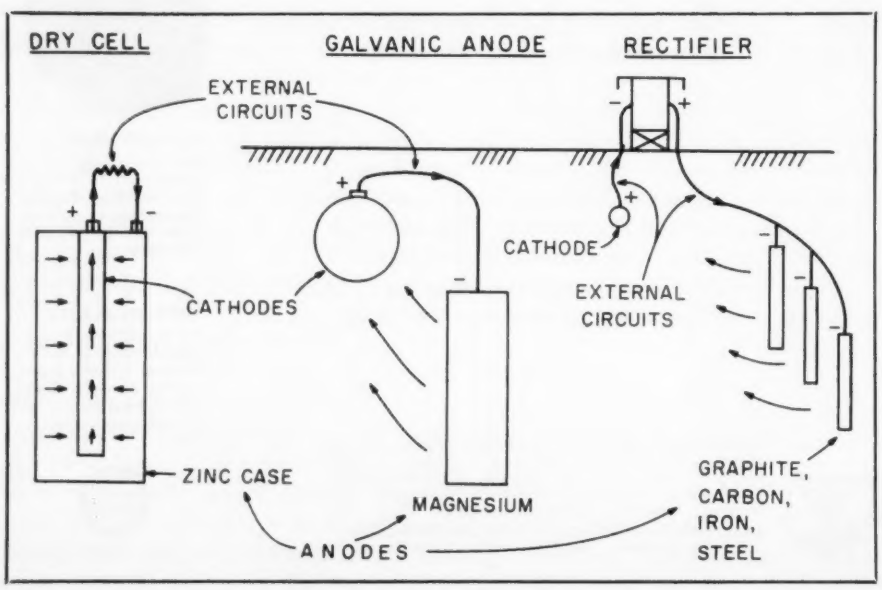
**A.** The negative terminal is so-called because it is receiving current from the *external* load circuit; however, we must remember that this current is then discharged by the negative terminal anode, through the *internal* battery circuit consisting of an electrolyte, to the positive carbon center terminal called the cathode.

The negative terminal of a dry cell, or any battery, is called the anode because it is anodic or electro-positive to the cathode material used. When the battery is connected to an external circuit, current discharges from the anode *through the battery electrolyte* to the cathode, which is protected at the expense of the corroding zinc anode in this case.

In cathodic protection of steel pipe by use of galvanic anodes of magnesium, zinc, or aluminum, these anodes are in effect, the negative terminals of *batteries for which the soil is the electrolyte,* and the steel pipe is the cathode corresponding to the carbon cathode.

The insulated wire running from the pipe to the anode corresponds to the external battery circuit even though in this instance it is buried in the internal electrolyte of the cell. Thus current flows from the magnesium, or other, anode through the soil into the pipe, then returns via the wire to the corroding anode, and so on . . .

The simple rule to remember is that the terminal receiving current *through the electrolyte* is the cathode and is protected.



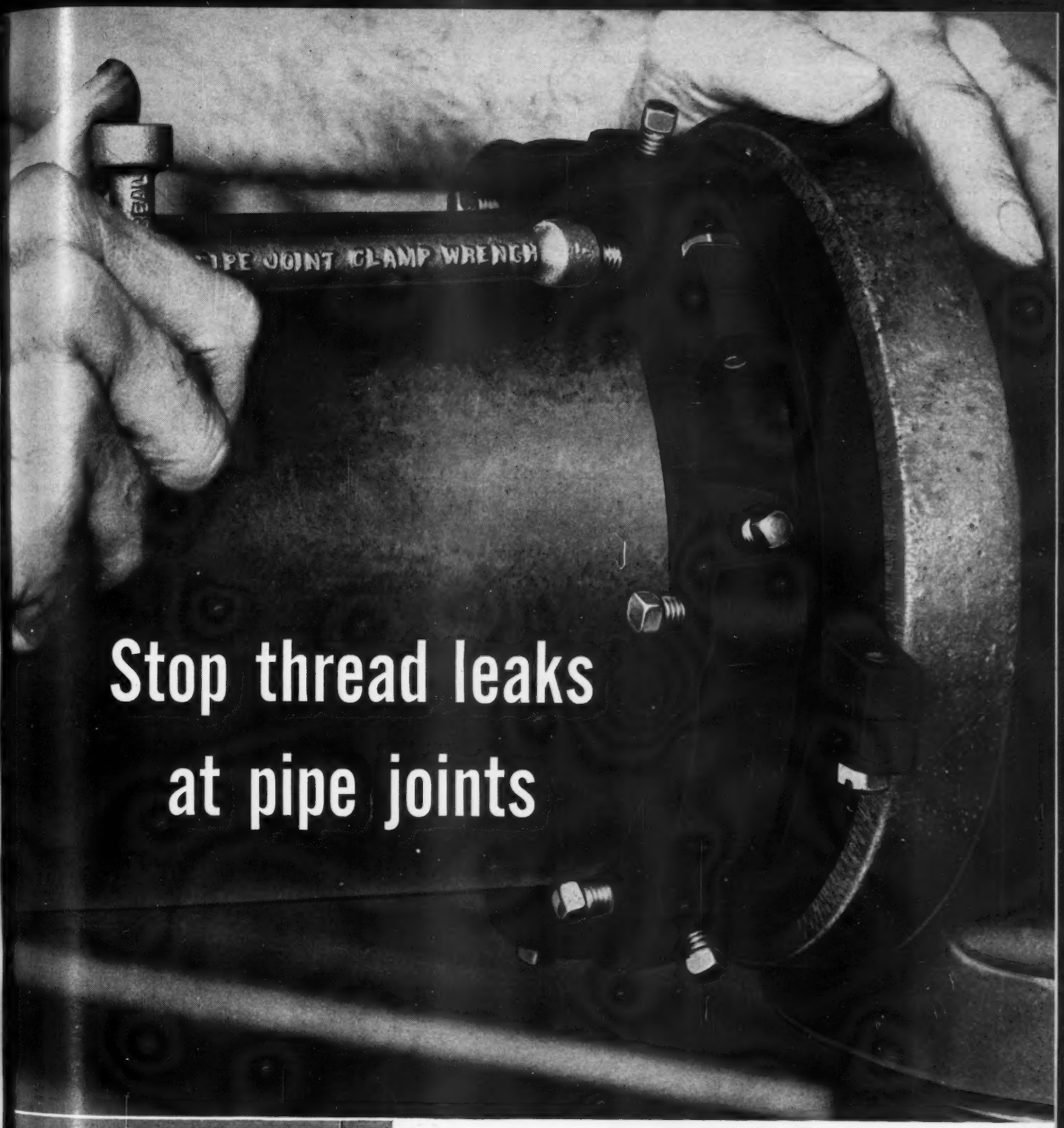

In cathodic protection of steel pipe by rectifier, we may think of the rectifier as a battery with positive and negative terminals. Direct current is forced from the positive terminal through the external circuit consisting of insulated cabling, carbon, graphite, iron, or steel anodes buried in the soil, the pipe cathode, and the return cabling to the negative terminal of the rectifier.

There is one interesting difference between this rectifier, or force-feed system, and the galvanic anode or gravity feed system — namely that the former does not have to, and usually does not, use anodes that are electro-positive to the steel cathode to be protected.

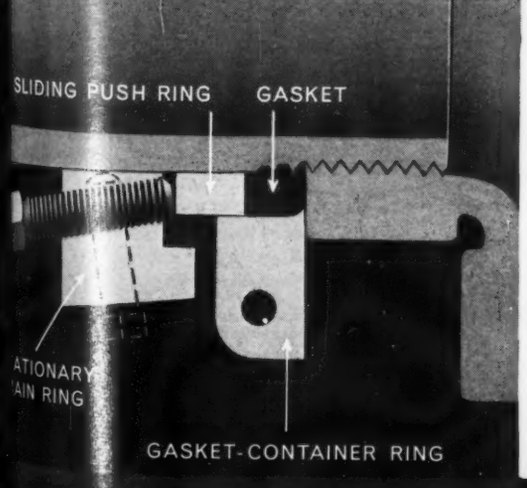
Indeed, carbon and graphite are from 2 to 3 volts electro-negative to steel, and when the rectifier is operating with these anodes, subtraction of 3 volts is usually made to obtain the true driving voltage to accurately determine ground bed resistance. When steel anodes are used this correction is not necessary.

**Q. Has the protection of underground pipe by means of wrap coatings developed to the point where cathodic protection can be dispensed with in all but the most corrosive soils?**

**A.** It is not anticipated that the time will ever come when cathodic protection of a coated pipe system should be omitted any more than an automobile should be driven without a spare tire




# Stop thread leaks at pipe joints




**SKINNER-SEAL PIPE JOINT CLAMP stops leaks at joints where pipe is screwed into fitting. Pressure? On sound joints, effective up to 2,000 p.s.i. Saves the cost of tearing out and renewing leaky fittings. Prevents shutdowns. Has served industry 60 years. Stocked by most distributors.**

M. B. SKINNER CO., SOUTH BEND 21, INDIANA

**SKINNER-SEAL PIPE JOINT CLAMP**

or a house wiring system installed without fuses in each circuit.

Cathodic protection, however, is not a standby device, such as a spare tire or a fuse, that goes into action after failure has occurred or safe load exceeded; rather, cathodic protection is continuously on the job to prevent coating defects from developing into corrosion leaks and is, therefore, a form of leak insurance. The better the quality of the coated pipe system, the less it costs. As road machinery, hand tools, or soil stresses put additional holidays in the coating, ever-searching protective rays silently fill the new gaps, each of which is a potential leak.

Corrosion engineers' tests have revealed several well-nigh perfect coating jobs, one of the best reported being a 400-mile system requiring less than 3 amperes to attain protective potentials. This current was furnished by a total of nine magnesium beds.

A bare pipeline in similar soils and approximately 485 miles long required 1600 amperes and utilized 40 rectifiers.

In the case of the well-coated line, the relatively low cost of cathodic protection could well have been exceeded by the cost of two or three bad leaks, while in the case of the bare line, the relatively high cost of the system paid for itself in four years on the basis of leaks prevented, and by now has paid for itself a second time.

Money spent to obtain a good quality coating in place, is well spent, but concurrently with coating plans and specifications, money should be laid aside for cathodic protection, for these two belong together as ham and eggs.

## GOT A QUESTION ABOUT CORROSION?

The *Corrosion Clinic* is open to everyone seeking answers to everyday problems in corrosion mitigation. No matter how simple or complex your problem, send it in . . we'll attempt to answer all questions in the Clinic Column . . . a new service of the regular AGJ "Corrosion Notebook" feature. Send your inquiries to:

**Corrosion Notebook Editor**
**American Gas Journal**
**Box 1589**
**Dallas 21, Texas**

**Q. In the cathodic protection of a new coated pipe system, what is the quantitative relation between initial and final protective currents?**

**A.** Final value of total protective current required for cathodic protection is less than the initial value due to gradual polarization of the pipe surface at the points of current entry through coating holidays.

For example, at a given point, the initial pipe-to-soil potential was –.52 volts; upon energizing the rectifier this measured –.75 volts, while one week later the value had stabilized at –.82 volts. The rectifier output current in the meantime had dropped from 9.7 amp to 8.9 amp.

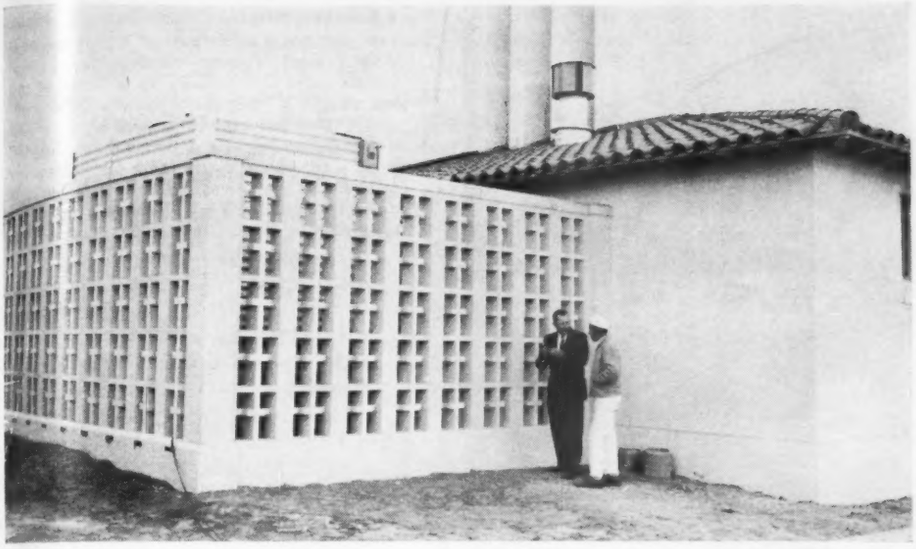
The poorer the coating, the longer it will take to polarize. Polarization may be accelerated by operating the rectifier above normal output initially. While this phenomena is detrimental to battery applications, it is a benefit to corrosion engineers, and often provides the necessary safety factor in obtaining full protection. ★ ★ ★

Soft as Moonlight. . .

The mellow glow of Gaslites adds delightful charm and interest to any outdoor setting. For information on the golden-crested Embassy or other distinctive Gaslites by Arkla, write

Gaslites by ARKLA

ARKLA • GASLITE DIVISION
SHANNON BUILDING • LITTLE ROCK, ARK.



**Cooling tower** for three Arkla-Servel DF-3000 gas absorption units installed in Phoenix church are camouflaged by decorative concrete block wall which harmoniously blends into church building. Notice how masonry lattice work is designed into crosses.

# Phoenix Church Among First To Use New Packaged 25-Ton Heating/Cooling Units

**Don Boillot,** *Arizona Public Service Company*
*Phoenix, Arizona*

**Explaining the operation** of Arkla-Servel's new single package heating and cooling system to Roger Bruneau, (left) maintenance man for St. Thomas the Apostle Church in Phoenix, is Jack Mulsow, commercial sales representative for Arizona Public Service Co. Three of the compact 25-ton units were installed in parallel position in specially-built equipment room in the rear of church.

**St. Thomas the Apostle Church** in Phoenix, Arizona, is the first church and one of the first few buildings in the United States to be heated and cooled by a production model of Arkla-Servel's new single package heating and cooling unit.

Three 25-ton Arkla-Servel DF-3000 gas absorption-type units now heat and this summer will refrigerate the recently completed $550,000 Roman Catholic Church. Exterior of the church edifice features Spanish architecture with a harmonious blend of brick and stucco construction. The church seats 1100 persons.

The gas absorption unit is a combination chilled water — hot water heat exchanger that receives its energy directly from a gas burner, thus eliminating usual heat sources such as steam producing boiler and converters necessary with most absorption heat exchangers.

Jack Mulsow, commercial sales representative for Arizona Public Service Company and a parishioner of St. Thomas, brought to the attention of the pastor, Father John Doran; the architects, Weaver and Drover of Phoenix; and the design engineering firm, Lowry and Sorensen of Phoenix; the forthcoming availability of the new unit. This was several months before the units were in actual production.

Mulsow used information obtained from Arkla's early reports on test models as well as stories appearing in the *American Gas Journal* to convince them that the direct-fired unit was the best heating and cooling system for St. Thomas's particular needs.

His four main selling points were:

1. low operating cost.
2. long life of equipment.
3. compactness and flexibility of unit.
4. quietness in operation.

Mulsow estimates that the Arkla units can operate about 15% less than comparable electric units (based on competitor's electric demand charge rates for that area) because of the load factor involved.

The Arizona Public Service representative also notes that, with proper maintenance, the equipment should have an average operating life of about 20 years.

Compactness and operating flexibility of the unit also weighed heavily in the decision. Two or more of the units can be stacked or paralleled to meet large tonnage requirements such as the 75 tons needed at St. Thomas. It is not unusual in the Phoenix area during winter months to use the heating system during cool mornings and the refrigeration system during warm afternoons.

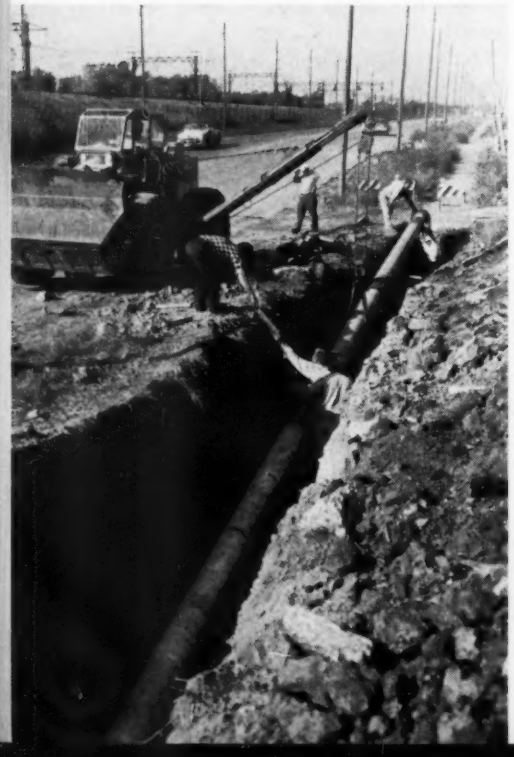
Quietness in operation played another important role in influencing the decision. The three units are housed in a specially-built equipment room in the rear of the church building. * *

**Backhoe lifts** new 8-in. mechanical joint cast iron gas pipe as part of a pipe replacement project recently completed by Central Illinois Light Co. To keep up with increasing use of gas in Springfield, Central Illinois recently installed several blocks of new cast iron pipe to replace a smaller line laid 70 years ago, which is now inadequate because of size. The line serves the downtown business district as part of a low pressure distribution system.

# Distribution Developments

NEWS ABOUT CURRENT AND PLANNED CONSTRUCTION

**Montana-Dakota Utilities Co.,** Minneapolis, Minnesota, plans to install 4 new distribution systems in Alexander, Arnegard, Watford City, all in McKenzie county, and Fryburg, Billings county, North Dakota. Total cost of the project which also includes direct industrial sale construction is estimated at $1,110,260. Construction is pending FPC approval of CP61-297, filed May 23. Project involves 15,800 ft of 3.5-in. lateral line to Fryburg at a cost of approximately $29,800, 5000 ft of 2⅜-in. to Arnegard at a cost of $6510 and 5500 ft of 2⅜-in. to Alexander for $7050. Cost of the distribution systems is estimated at $18,330 for Arnegard, $27,430 for Alexander, $132,620 for Watford City, and $5970 for Fryburg. Approximately $31,490 is to be spent for four city gate stations.



**Versatility of tractor-shovel** equipped with a side boom for gas distribution work was demonstrated in Chicago recently by McKay Contractors, Inc. Recent project for Peoples Gas Light & Coke Co. called for a 7 ft depth placement of 800 ft of 12-in. high pressure gas line. The tractor-shovel unit carried the 85-ft sections of pipe from the storage area to the trench, placed the pipe, and handled the backfilling chores.

**City of Granby,** a new municipal gas system located in Newton county, Missouri, has asked the FPC to direct Cities Service Gas Co. to establish connection of its transmission facilities with those to be constructed by the City and to sell it natural gas for distribution within Granby. Total cost of the project is set at $280,000 with $84,979 allocated for a 6.5 mile supply lateral and $130,941 for the distribution system. Project involves installation of 46,450 ft of 1 thru 4-in. steel lateral line at a cost of $64,977, a measuring and regulating station ($2000) and odorizer ($1030), $2525 for service assemblies, $2275 for service connections, $2790 for cathodic protection, $850 for valves, $690 for markers, $3891 for crossings, $1500 for anchors, and $200 for land. Included in the distribution system project, approximately $73,797 is tabbed for 93,790 ft of 1 thru 4-in. pipe. Another $1000 for regulator station, $27,849 for service assemblies, $7099 for service connections, $35,550 for valves, $6500 for cathodic protection, $540 for pressure recording station. Construction is pending FPC approval.

**North Central Public Service Co.,** St. Paul, Minnesota, plans to initiate gas service in village of Milaca, Minnesota, near Princeton, Minnesota, and has asked the FPC for authority to connect its lines with Midwestern Gas Transmission Co. Total cost of the project is set at $97,226 with $23,342 labeled for a 1.55 mile 4-in. lateral from Milaca district regulator station to Midwestern's main line from Canada. Construction is to be done by North Central personnel or its affiliate, Donovan Construction Co. Another $73,884 is tabbed for the distribution system in Milaca the first year. At the end of third year, cost will be $85,880. Of this, $15,394 is for 29,200 ft of 2 thru 4-in. pipe; $2590 for other material. $12,940 for services and meters; $500 for a district regulator; $18,493 for installation of mains, $3667 for miscellaneous installation, $10,136 for installation of services and meter, and $527 for installation of regulator. Another $9637 is set for engineering, contingencies and overhead.

**Illinois Power Company,** Decatur, Illinois, plans to spend approximately $4,287,000 this year to install 20 new distribution systems. Construction is underway on all but six which are scheduled to begin in July and August.

In Tilden, approximately 57,550 ft of ¾ thru 3-in. mains and services will be installed at a cost of approximately $145,000 by Holdren Construction Co. starting in August. In Summerfield, approximately 41,580 ft of ¾ thru 2-in. mains and services will be installed at a cost of $105,000 by Sommerville-Illinois Construction Co. starting in August. In Odin, 78,900 ft of ¾ thru 4-in. feeder mains, mains and services will be installed at a cost of $195,000. In Cerro Gordo, 33,000 ft of ¾ thru 3-in. feeder lines will be installed at a cost of $183,000. Last two projects are scheduled to begin in July. *(Contractor for the jobs has not been named at publication time.)*

Projects currently underway include installation of 95,650 ft of ¾ thru 3-in. mains and services in Troy at a cost of $218,000 by Sommerville-Illinois Construction Co. In Maryville, 121,555 ft of ¾ thru 4-in. mains and services are being installed at a cost of $331,000. In Marine, 41,600 ft of ¾ thru 2-in. mains and services are being installed at a cost of $100,000. In St. Jacob, 28,200 ft of ¾ thru 2-in. mains and services will be installed by last of July at a cost of $69,000. In Pierron, 11,040 ft of ¾ thru 2-in. mains and services will be installed at a cost of $35,000. In Pocahontas, 39,060 ft of ¾ thru 3-in. mains and services will be installed by September at a cost of $92,000. In Greenville, 199,200 ft of ¾ thru 6-in. will be installed by September at a cost of $105,000. Contractor for the projects in Troy, Maryville, Marine, St. Jacob, Pierron, Pocahontas, and Greenville is Sommerville-Illinois Construction Co.

In New Athens and Lenzburg, Illinois Power has construction underway on two new distribution systems. Approximately 68,340 ft of ¾ thru 3-in. mains and services will be installed at a cost of $181,000 in New Athens, and 21,650 ft of ¾ thru 2-in. at a cost of $58,000 in Lenzburg. Gallatin Construction Co. is contractor on both projects.

In Marissa, 86,430 ft of ¾ thru 3-in. mains and services are being installed at a cost of $209,000 by contractor crews of Terry & Seibel Co. In Mitchell-Pontoon, 134,200 ft of ¾ thru 6-in. feeder main, mains and services will be installed by October at a cost of $4[illegible]7,000 by M & M Construction Co. In Smithton-Douglas, contractor crews of P. L. Murphy Construction Co. have construction underway on a $204,000 construction project involving installation of 50,160 ft of ¾ thru 3-in. feeder main, distribution mains and services. In Sparta, Holden Construction Co. crews are installing 166,020 ft of ¾ thru 6-in. feeder main, distribution mains and services at a cost of approximately $540,000; work is scheduled to be completed September. Construction is also underway in Utica where 77,570 ft of ¾ thru 8-in. feeder main, distribution mains and services, and a metering station are being installed at a cost of $520,000. In Wyanet, 109,600 ft of ¾ thru 3-in. feeder mains and services are being installed at a cost of $128,000. In Ogden, plans include installation of 30,000 ft of ¾ thru 3-in. feeder main, distribution mains and services at cost of $77,000; no dates have been set for completion of this project.

**Central Illinois Public Service Co.,** Springfield, Illinois, plans to build new distribution systems in Macon, Macon county, Illinois and the nearby communities of Blue Mound, Macon county, Moweaqua, Shelby county, and Assumption, Christian county at an estimated total cost of $668,320. Supplier, Panhandle Eastern Pipe Line Co. has asked FPC okay for extension of service (CP61-289). Project involves 116,688 ft of 4-in. lateral costing approximately $276,250, four measuring and regulating station at a cost of $16,000, 143,900 ft of 2 and 4-in. mains at a cost of $195,615, 1530 customer meters and services at a cost of $154,530. Central Illinois hopes to start service in Macon by August 13, this year.

**North Central Gas Company,** Casper, Wyoming, plans to install a 31,654 ft 3-in. lateral line and new distribution system in Lyman, Scotts Bluff county, Nebraska, at an estimated total cost of $77,065. Of this total, approximately $38,094 is tabbed for installation of the lateral which will extend from Milepost 10.34 on North Central's transmission line to the town of Lyman. Another $27,765 is tabbed for installation of 1887 ft of 3-in. distribution mains, 4092 ft of 2-in. and 12,162 ft of 1¼ intermediate pressure mains; $2331 for services, $3177 for meters and house regulators, and $2574 for the city gate. Contractor for the project is White Ditching Co. of Casper, Wyoming. Work is expected to get underway in August and completed by October 1961.


HERE'S THE DITCHER FOR SHALLOW SERVICE and ELECTRICAL LINES

*Vermeer's* Rugged, Low-Cost Model

**W-I POW-R-DITCHER**

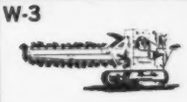
**Digs Up to 8" Wide . . . All-Hydraulic Ground Travel**

The new Model W-1 Pow-R-Ditcher is the "baby" of the expanding Vermeer Ditcher line. An ideal unit for contractors, utilities, custom operators and plumbers installing shallow service lines. The W-1 features all-hydraulic ground travel regardless of digging or transport speeds. The boom is also raised and lowered hydraulically. This is a powerful, rugged small trencher that "can really take it". Powered by a 9 hp. Wisconsin AENL engine. Gives maximum ground traction even under most rugged digging conditions. Ask for a demonstration.

PICK THE POW-R-DITCHER TO FIT YOUR NEEDS

524T

W-3



4T Equipped With 18 HP. Engine

3P

Please send me FREE information and prices on the complete Vermeer line of self-propelled POW-R-DITCHERS.

NAME.....

FIRM.....

ADDRESS.....

CITY.....STATE.....

☐ Also include information on new Vermeer hydraulic back filler.

VERMEER MANUFACTURING COMPANY

1451 WASHINGTON • PELLA, IOWA

FLEET-LINE

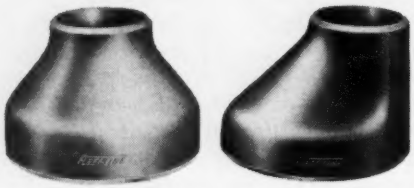
WELDING FITTINGS

•

LITERATURE BY AIR MAIL...

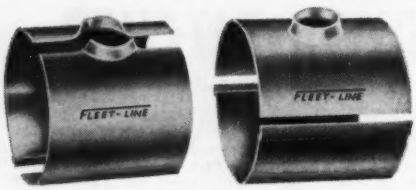
...ask for it now.

REDUCERS: Concentric and eccentric. Nominal pipe sizes 1" to 30", ASA B16.9, ASTM A234. Schedules 10 to 160, stainless steel, and other alloys. Special lengths and sizes.

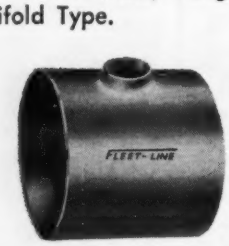


SADDLES: Conventional, and for pressure vessel heads. Nozzle sizes from ¼" to 24". Fleet-Line saddles weld neatly into place in much less time, and with much less welding rod.

Full encirclement saddles.




REDUCING TEES, Forged Steel Manifold Type.




Dealers and Stocking Distributors throughout the United States and Canada.

All orders acknowledged by air mail or long distance telephone and filled at once.

STEEL FORGINGS, Inc.

P. O. Box 276B • Shreveport, La.

## Distribution

**Keokuk Gas Service Co.,** Keokuk, Iowa, has asked the FPC to direct Michigan Wisconsin Pipe Line Co. to connect its lines and supply natural gas for distribution in a new system it proposes to build in Montrose, Iowa. (North Central Public Service Co. of Fort Madison, Iowa, has proposed similar competitive service in Montrose. However, Keokuk received gas franchise ordinance for the job in February 1961. With FPC approval Keokuk hopes to start construction in July 1961) Total cost is estimated at $60,135. Project involves installation of 4224 ft of 6-in. to Port Lee, Iowa, for future industrial service ($16,896), 7329 ft of 2¼-in. lateral to Montrose from Mich-Wisconsin lines ($13,192), and 11,511 ft of 1½-in. distribution mains and services ($17,267). Approximately 213 ½-in. copper service, meter, and regulator sets are to be installed at an estimated cost of $12,780.

**Washington Gas Light Co.** Washington, D.C., plans to extend gas service to Bowie, Prince Georges county, Maryland, near Washington, D.C. at a cost of $415,000. Approximately $400,000 is tabbed for the feeder line and $15,000 for a regulator. Project involves 6.63 miles of 12.75-in. steel main and installation of a regulator station at U. S. Route 50 and Collington Road. Approximately $210,000 is set aside for materials such as pipe, coating, valves, fittings, etc. and $115,000 for labor and installation. Another $20,000 goes for right-of-way, $5000 for paving and $28,000 for engineering and supervision. Materials for the regulator, including regulator, piping, valves and vault, will cost approximately $6400, installation, another $6500, engineering and supervision, $1200. Interest and contingencies account for the balance of the budgeted sum. Construction is pending FPC approval.

**Northern Illinois Gas Co.,** Bellwood, Illinois, plans to extend natural gas service to Tampico, Whiteside county, Illinois, at an estimated cost of $152,600 in the fifth year. Supplier, Natural Gas Pipeline Co. of America recently asked FPC okay on extension of supply to NI-Gas lines. Distribution system will include lateral of 10,560 ft of 4-in. and 7920 ft of 4-in., 16,368 ft of 2-in.

NI-Gas recently obtained two 50-year franchise ordinances to serve the villages of Carbon Hill and Elburn, and plans to extend service to the two communities this year.

*For Your Customers Who Look For Economy as well as Dependable, Instant, Positive Cooling*

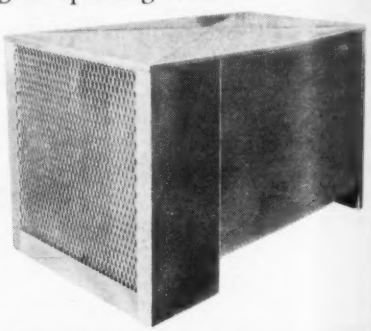
SPECIFY: gascool NATURAL GAS OR LPG POWERED AIR CONDITIONING SYSTEMS

Gascool's lower fuel consumption (20 cubic feet of 1000 BTU natural gas per ton hour of operation), and its direct engine-to-mechanical compressor drive combine to give up to 61% savings in operating costs.

**COOLING:**
Gascool's compact systems with self-contained air cooled condensers are available in 3 to 15 ton models. These units require no special installation or wiring and give completely automatic cooling through a thermostat control.

**COOLING & HEATING:**
Gascool's combination roof-mounted heating and cooling unit is available in 5 to 10 ton models. These units eliminate the expense of large mechanical equipment rooms, ducts, and drop ceilings. Switching from cooling to heating is done easily by means of a simple thermostat switch.

(Chiller packages available on all models.)



For residential, commercial, or institutional air-conditioning requirements, specify Gascool for a completely balanced, gas-powered, air conditioning system.

Models in 10 ton to 30 ton with water cooled condensers and remote type air cooled condensers.

gas cool

Literature available on request.

Div. of Aero-Test Equip. Co. Inc.

8401 Chancellor Row, Dallas, Texas

## Developments

**City of Adairsville, Georgia,** has asked the FPC to direct Southern Natural Gas Co. to connect its transmission system with facilities the city proposes to build, and, to sell the city natural gas for distribution in Adairsville and surrounding area in Bartow county. Total cost of the project is set at $310,000 of which $155,522 is for 131,560 ft of 2⅜ in., 3½ in. and 4½ in. pipe; $4000 for a regulator station; $4000 for an odorizing station, and $1000 for 10 cathodic test leads; $1000 for a special service; $10,438 for contingencies; $15,000 for piping and conversion of LP-gas customers; $3000 for pavement and rock excavation; $33,600 for low pressure services; $6875 for high pressure services; $2000 for right-of-way; $19,120 for engineering. Other direct costs include: $375 for five 4-in. plug valves with boxes; $1045 for 19 2.5-in. plug valves with boxes; $1845 for 41 2-in. plug valves with boxes and $1200 for casing and insulators for railroad crossings. Construction is pending FPC approval.

**Western Kentucky Gas Co.,** Owensboro, Kentucky, has FPC okay on a gas supply from Tennessee Gas Transmission Co. to supply Perryville, Boyle county, Ky. with approximately 362 Mcf daily by the third year. Total cost of the project is set at $63,000 at the end of the first year with approximately $22,500 tagged for construction of a 1.5 mile transmission lateral south of the City of Perryville, and a $40,500 for a distribution lateral.

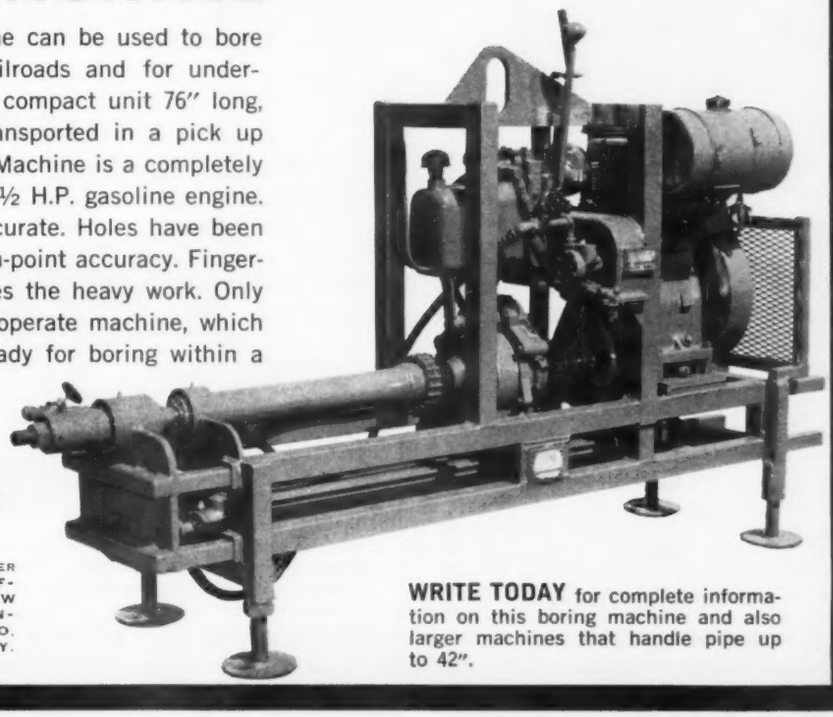
**Three shiny new trailers** are latest addition to Peoples Gas Light and Coke Company's district shops. They replace old buses formerly used as offices, street gang headquarters, and storage units for men working on large scale gas main projects of the distribution department. New units are roomy, convenient, well-equipped headquarters on wheels for street foremen, engineers and workmen.


*For small diameter road boring jobs*

• A NEW SELF-POWERED • ACCURATE **CROSE-PERRAULT**

**BORING MACHINE**

The Crose portable boring machine can be used to bore holes under streets, highways, railroads and for underground service. The machine is a compact unit 76" long, 39" high and 20" wide. Easily transported in a pick up truck since it weighs only 595 lbs. Machine is a completely self-contained unit powered by a 7½ H.P. gasoline engine. Outside power is not required. Accurate. Holes have been bored up to 75 feet with almost pin-point accuracy. Finger-tip controlled hydraulic power does the heavy work. Only 12 feet of open ditch required to operate machine, which can be positioned in bell hole ready for boring within a few minutes.



Crose perrault EQUIPMENT CORP

2761 DAWSON ROAD • PHONE WEBSTER 6-2171 • TULSA, OKLAHOMA • BRANCH OFFICES: HOUSTON, TEXAS • ELIZABETH, NEW JERSEY • IN CANADA: CROSE-PERRAULT CANADA LTD., EDMONTON, ALBERTA • TORONTO, ONTARIO • EXPORT OFFICE: NEW YORK, N. Y. • CABLE ADDRESS: CROSE

**WRITE TODAY** for complete information on this boring machine and also larger machines that handle pipe up to 42".

# Newsreel

**An automation committee** has been formed by the American Gas Association to coordinate and expand efforts in this area. Previously, various AGA committees have studied automation as it related to specific fields, now the new committee will collect and distribute information about automation in the gas industry, recommend economical application of automation, and suggest research projects. Neal B. LauBach, vice president, operations, Colorado Interstate Gas Co., Colorado Springs, has been named chairman of the committee.

**Southwestern Plastic Pipe Co.** of Mineral Wells, Texas, has purchased Ken-Way Plastic Products Corp. of Phoenix, Arizona, to extend its distribution and manufacturing facilities into new areas. The company name will be changed to Southwestern Plastic Pipe Co. of Arizona and officers of the Texas firm will assume similar positions in the new company. E. F. Clemens, will be president, Eugene C. Clemens, first vice president, and J. F. Bailey executive vice president. M. B. Crawford, part owner of Ken-Way, will continue in charge as active manager of the Phoenix company.

**Ten service awards** were presented at AGA's annual Distribution and Production Conference held in Philadelphia recently. **E. F. Trunk,** vice chairman of the operating section committee, and chief engineer of Laclede Gas Co. presented plaques and certificates to outgoing committee chairmen and subcommittee chairmen: *(First row)* **J. H. Dennis,** manager of gas customer service department, Long Island Lighting Co.; **Michael Anuskiewicz, Jr.,** assistant chief engineer, Brooklyn Union Gas Co. *(Second row)* **P. C. Hoy,** supervisor with Dayton Power and Light Co.; **Robert W. Alexander,** assistant district supervisor, Cincinnati Gas & Electric Co. *(Third row)* **Frederic Peters,** superintendent of gas measurement, New York State Electric and Gas Corp.; **James S. Janssen,** principal gas engineer, New Orleans Public Service Inc. Not shown are **Hugh R. Murphy,** engineer for Peoples Gas Light & Coke Co. **J. G. Surchek,** project engineer for Dearborn Chemical Co., **Arthur W. Stewart,** Howard Aero Co., and **Harold C. Boone,** senior engineer, Peoples Gas Light & Coke Co.

**Greeley Gas Co.** now serving 3[illegible] Colorado and Kansas communities, has expanded its operations with the purchase of Minnesota Natural Gas Co. which serves 5250 customers in 4 southern Minnesota towns: Worthington, Widom, Lakefield, and Mountain Lake. Minnesota Natural will operate as a Division of Greeley Gas, and continue to buy its gas supply from Northern Natural Gas Co. Manager of the new Division is Robert E. Geisendorfer; John Wallace is sales manager.

**Formation of a new interstate gas pipeline company** to be known as Monterey Gas Transmission Co., has been announced by Humble Oil & Refining Co. and Lehman Bros., a New York investment firm. The new company plans to purchase 6.2 million Mcf gas reserves in place in Southwest Texas from Humble, and to sell gas from these reserves in a long-term gas purchase contract to The Columbia Gas System, Inc. John R. McMillan, former executive vice-president of Monterey Oil will head the new pipeline company as president. Under present plans the new company will ultimately transport more than 700 million cu ft of gas a day from Southwest Texas to Alexandria, La., for sale to United Fuel Gas Co., principal supplier of gas to other Columbia Gas System companies.

**Boni-Watkins, Jason,** prominent consulting firm, recently merged into H. Zinder & Associates, Inc., will operate as the economic and management division of the Zinder organization with Alfred C. Boni as director of the division. Myron W. Watkins one of the firm's founders will continue as a special consultant.


1897 1961

GOODMAN GAS MAIN STOPPER
Used since 1897
Improved Locking Sleeve

PIPE STOPPERS
OF ALL KINDS

- Mechanical
  - Expanding
    - Inflatable

SAFETY
GAS MAIN
STOPPER
CO.
INC.

523 Atlantic Avenue
Brooklyn 17, N. Y.
Cable Address: GASTOPPER, N. Y.



The MINIATURIZED-PRECISION
WILKINSON Line Locator Model W-3

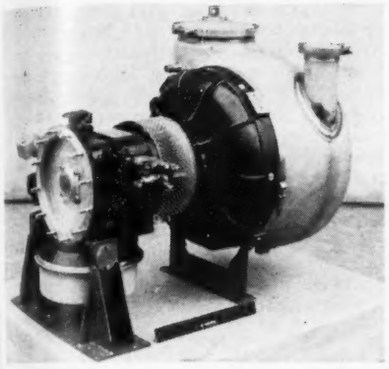
This radically new, super-powered, transistorized instrument weighs only four pounds and is one-fourth the size of conventional pipe locators.

It is as handy as a flashlight;
the maintenance is trivial;
the non-leak miniature batteries last ten times longer. Long-life transistors eliminate replacement. Molded glass fibre cases. Transistor ear set. Telescopic handle. Etched circuitry. Contained in carrying case.

WILKINSON PRODUCTS COMPANY
"SINCE 1940"
3987 Chevy Chase Drive • Pasadena 3, California • SYlvan [illegible]-4314

# Product Parade

MATERIALS • EQUIPMENT • SERVICES



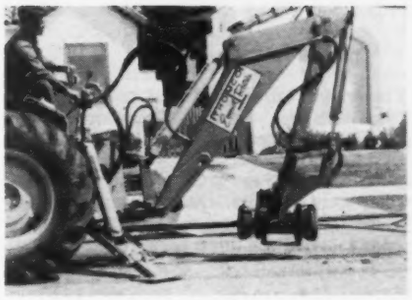
**Gas turbine for air conditioning.** Solar Aircraft Co. has under development in cooperation with the American Gas Association a new 350-hp gas turbine aimed at air conditioning applications. The T-150 engine weighs only 195 lb. Is a simple cycle turbine that is not only lightweight and compact, but starts instantly even under severe climatic conditions. **1**

**Flexible couplings** . . . straight, transition, reducer, tee, and repair . . . of all sizes, from ½ to 24-in. . . . for steel or cast iron pipe . . . are described in 14-page 2-color bulletin from R. H. Baker & Co. Included are standard heavy duty couplings, long sleeve couplings, and insulating couplings. **2**

**Gas lights of authentic historic design,** dating back to the 1870's as well as lamps from the Gay 90's, including brackets and posts are featured in a colorful new 4-page brochure entitled "Lamps of Distinction" available from the Welsbach Corp. Also featured are mantles, replacement glassware, and replacement parts. **3**

**Rolotork** . . . a new type of lubricated plug valve designed by Walworth Co. is described fully in a new 16-page brochure. Unit features a steel thrust ball bearing unit that produces easy operation, a positive stem seal, and a one piece stem and plug. Brochure describes both gear — operated and wrench-operated valves, gives pressure ratings and sizes. **4**

**Service saddles** . . . wraparound single strap or double strap . . . and double strap service repair clamps . . . made of malleable iron, ductile iron, or bronze, in sizes from 1¼ to 12-in. are described in new bulletin from R. H. Baker Co. **5**



**How to install pipe with a backhoe** is discussed in literature available from Hydra-Serv, Inc. of California on their "Hydra-Mole" unit. Basically designed as a boring machine for installing pipe in the ground, the unit is said to bore at rates up to 1 ft per sec horizontally depending upon model and gear ratio. Unit can endload the bored or rotated object up to 7 tons; it will handle pipe from ⅜-in. to 3-in. directly through the machine or up to 12-in. using a reaming and packing procedure in conjunction with the boring operation. Readily adapted to any hydraulic backhoe. Unit can operate in any attitude — horizontal, vertical, or at any angle between. It can operate from the surface of the ground or in a slot 18-in. wide, and at any depth the backhoe is capable of operating. **6**


QUIK-HEAT®

up to 2200° F.

CLEMENTS Cadillac® MODELS K3 & M2 BLOWTORCHES

Here are rugged, high efficiency blowtorches that speed up all types of heat treating and production operations. These two Clements Cadillac Blowtorches provide heat up to 2200° F. in seconds and are fully portable.

With the Clements Cadillac model K3 or M2 you can bring the torch to the work instead of the work to the torch as in fixed installations. Furnished fully equipped with 20 ft. of Underwriters' Laboratories and Canadian Standards Association approved 3-wire cable with plug, 10 ft. of gas hose with fittings ready to attach to your gas line and with sturdy, high stability stand. Easily adjustable for height and direction of torch.

*Operates on natural, manufactured or LP gas.*

*ask for* BULLETIN

INDUSTRIAL PRODUCTS DIVISION | CLEMENTS MFG. CO.
6619 S. Narragansett Ave., Chicago 38, Ill.
*SINCE 1910*

**Extra Heavy All-Malleable COUPLING**

Engineered for latest distribution pressures and for installation ease. Inspect its construction and quality materials in detail.

**Provides More Deflection Than Ever**

**Top Quality for 22 Years in Gas Distribution Equipment**

Get helpful CATALOG 29. Photos, specs, detail drawings & much helpful data for modernizing or new installations.

PERMANENCY Rely on NORTON-McMURRAY for the finest! NORMAC continues to modernize and improve couplings and fittings in step with latest gas distribution demands. 22 years experience concentrated on ONE purpose . . . the BEST! Today, major gas distribution companies say "NORMAC" to define their standard of quality.

NORTON - McMURRAY Mfg. Co.
919 N. Michigan Ave • Chicago 11, Ill.

**Butterfly valves** . . . rated at 150 psi and ranging from 2 to 18-in. pipe size . . . are latest new product line available from Lunkenheimer. The butterfly valves have nickel-plated cast iron or cast steel bodies with stainless steel trim. For special applications, a variety of alternates is available including rubber or ceramic lining, monel trim, and aluminum-bronze discs. 7

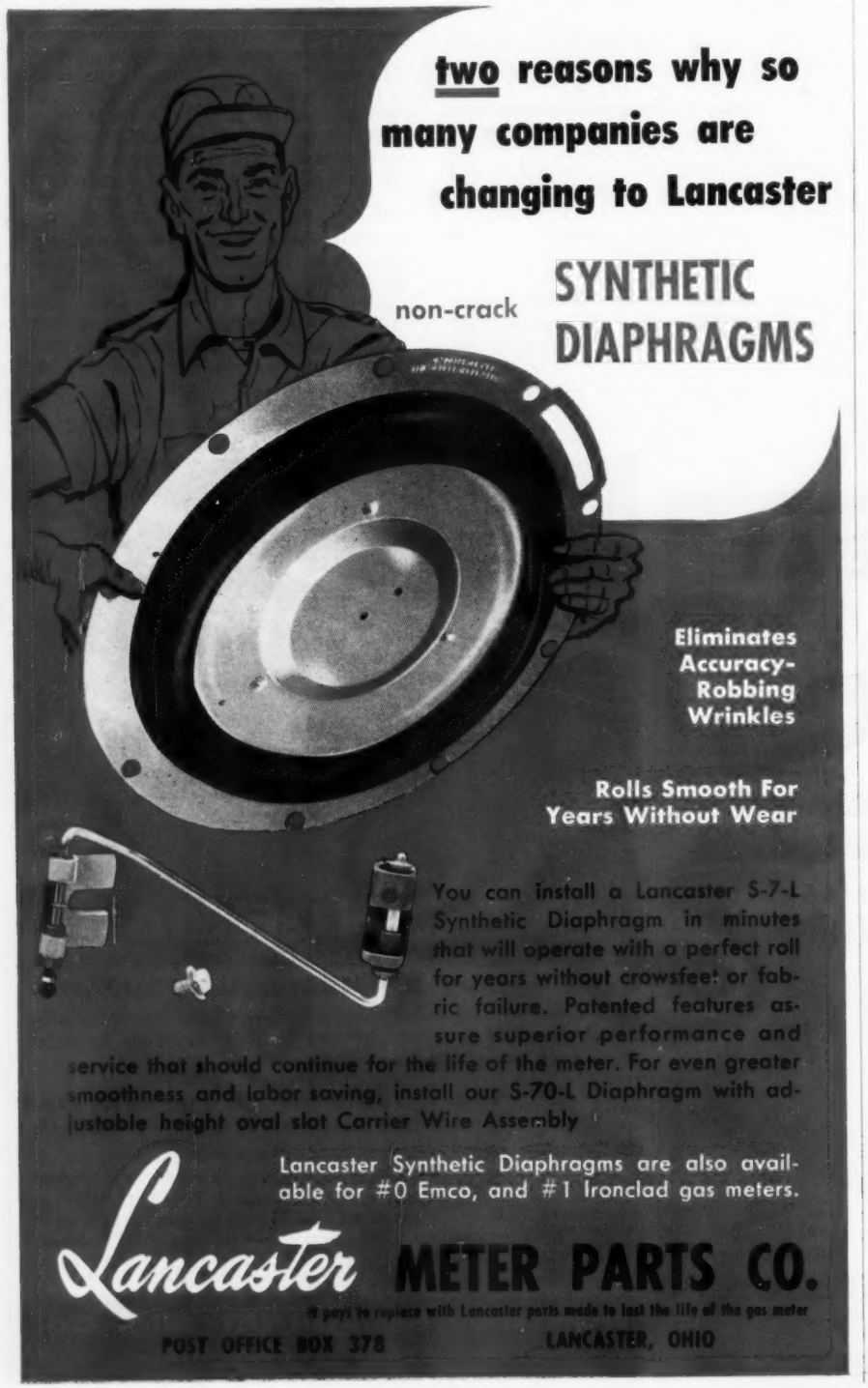
**Transportation supervisors** will want to take note of a new self-contained electrically powered and electrically-heated multi-job high pressure washer for automobile bodies, engines, parts, machinery, equipment, trucks, etc. Known as Jenny Multi-Job Washer, the unit produces degreasing or cleaning spray of 25 gal per hr at 300 psi and 100 deg rise in solution temperature; or a wash-rinse spray of 90 gal per hr at 250 psi and 25 deg rise in solution temperature. Available in portable or stationary models, unit operates on 230 60 cycle, single phase a-c current; is equipped with hose rack, 40 ft of solution hose, gun, and 3 nozzle tips. Weighs approximately 155 lb. Write for literature and price list. 8

* * *

Patient: "I'm all out of sorts. The doctor said the only way to cure my rheumatism is to stay away from dampness."

Friend: "What's so tough about that?"

Patient: "You don't know how silly I feel sitting in an empty bathtub, going over myself with a vacuum cleaner." — *Philnews.*



two reasons why so many companies are changing to Lancaster
non-crack
SYNTHETIC DIAPHRAGMS
Eliminates Accuracy-Robbing Wrinkles
Rolls Smooth For Years Without Wear
You can install a Lancaster S-7-L Synthetic Diaphragm in minutes that will operate with a perfect roll for years without crowsfeet or fabric failure. Patented features assure superior performance and service that should continue for the life of the meter. For even greater smoothness and labor saving, install our S-70-L Diaphragm with adjustable height oval slot Carrier Wire Assembly
Lancaster Synthetic Diaphragms are also available for #0 Emco, and #1 Ironclad gas meters.
Lancaster METER PARTS CO.
It pays to replace with Lancaster parts made to last the life of the gas meter
POST OFFICE BOX 378
LANCASTER, OHIO


## PRODUCT

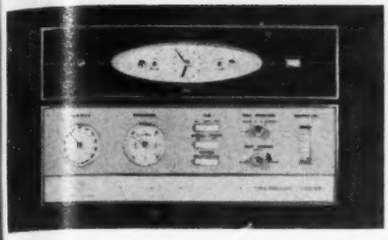
**Two-way radio communications towers** from 10 to 500 ft in height are now available from Motorola. New line includes 8 bolted or welded guyed towers and 1 self-supporting model. Seven of the towers have windload rating of at least 30 lb per sq ft with possible antenna loads varying from 1 antenna for lightest models to 5 for heaviest model. The very heavy duty bolted angular steel tower which can be raised to 500 ft, has 40 lb per sq ft windload rating and will support 5 antennas. The self-supporting tower, designed especially for urban installations, has a standard maximum height of 120 ft and requires only maximum 8 ft sq ground areas. All towers in new line have triangular structural design with all components "hot dip" galvanized to protect against elements. 9

**Spiral-flame gas burners** from Eclipse Fuel increase furnace capacity. Burners create a flat, spiral flame that hugs the arch and/or walls of heat-treat furnaces, galvanizing tanks, etc. Radiation effect, caused by flame scrubbing large areas of furnace wall, increases over-all heat transfer rates. Work can be located very close to burner without danger of flame impingement or hot spots. As result, new furnaces can be smaller and less expensive with lower heat loss from wall area than if conventional-type burners are used. Six burner sizes provide capacities from 100,000 to 1,800,000 Btu per hr. Flame diameters range from 13 to 60 in. 10

**New ball valve** . . . designed by Clayton Mark & Company . . . features improvements in sealing characteristics, compact one-piece forging, and built-in union ends which simplify installation operation and maintenance. To install new valve, union ends are either screwed or welded on pipe ends and the one-piece valve body then is easily assembled to union nut. Simplified design of valve body and union ends eliminates need for nuts and bolts and an extra union in the line. For maintenance, downstream line can be disconnected while valve is under pressure without adding extra parts. 11

"HIM FROM WASHINGTON.-MAKE FUEL POLICY STUDY."

## PARADE



**General Controls'** new *Thermoramic Center* offers indoor weather data and control as well as information on outdoor atmospheric conditions. Unit measures 8 by 14 in., serves as a sentinel for external barometric and humidity conditions plus automatic sequencing of day and night indoor temperatures. Another feature is a monitor system that indicates clogged air conditioning filters, an extinguished gas pilot light, an improperly functioning compressor, or the need to reset an oil burner. **12**

**Multi-purpose,** highly accurate instrument for on-the-job testing of gas burner controls is now available from Baso Inc. Unit checks drop out values of thermoelectric power units, MV output of thermocouples and pilot generators, performance of pilots during main burner operation, and continuity of any electrical circuit. Is engineered for dependable long life operation. Although compact, design provides three wide division scales for accurate readings of 0-30, 0-300, and 0-900 for both millivolts and milliamperes. **13**

**Pipe anchor.** New screw-type corrosion-resistant anchor designed and engineered to solve pipeline hold-down problems is described in 16-page catalog now available from Petroleum Anchor Equipment Inc. New *Natchez* anchor has permanent head, eliminating need for nuts, bolts, washer, or installation adapters. Upset square head is sized to fit impact power equipment for fast installation even in hardest soils. Cold rolled steel rod and helix are nickel plated. Available in standard lengths of 72 and 96-in. with 6, 8, 10, and 15-in. helix. **14**

**Inside story on** how General Controls achieved foolproof operation without maintenance or service during lifetime of its automatic controls used to actuate dampers, louvers, draft doors, vents, and valves on heating, air conditioning, and ventilating systems is available on request. To provide maximum reliability at reasonable cost, General Controls developed a technique for assembling the controls that includes use of 1150 psi hydraulic ram pressure to permanently seal main base housing of the unit. Such a permanent seal required exacting performance standards of mechanical parts contained inside the base housing including the only non-metallic part — a synthetic rubber-coated diaphragm manufactured by Reeves Brothers, Inc. In both the DH-O damper actuators and HO valves, the diaphragm has a critical function and throughout the life of the control the diaphragm must retain sensitivity and flexibility and must not stiffen, swell, or develop leaks. After many tests selection for this application was a Revecote Buna-N coated nylon .050 in. thick, molded to specifications. **15**

**To detect leaks** in pressurized systems of all kinds, is purpose of Aviation Lubricants Co.'s new product called *Elf Bubble Fluid*. Non-corrosive, the fluid will not etch metals, is easily removed by rinsing or washing with water. Is non-toxic and non-injurious to human skin. Fluid may be poured or brushed on surface or structure or a dipping or immersing testing technique may be employed. **16**

**The B-I-F Shuntflow meter,** considered one of the most practical instruments for measurement of steam, air, or gas in lines 1-in. and larger . . . where accurate accounting of flow is desired . . . is described in new 4-page bulletin containing latest information, specifications, sizes, and accessories, issued by B-I-F Industries. Bulletin has an excellent cut-away drawing, and highlights the new pressure-compensating counter, which automatically and continuously corrects counter readings for line pressure variations. **17**

**Brochure** describing the EASY automatic programming aid for Honeywell 400 EDP system has just been published by Minneapolis-Honeywell's Electronic Data Processing division. EASY, meaning Efficient Assembly System, as the brochure explains, is designed to help computer users solve data processing problems. The system simplifies task of programming by eliminating need for programmer to be completely familiar with complex language of machine. **18**

Just the ticket
for those INDUSTRIAL
and COMMERCIAL jobs!
MODEL
461
CHAPLIN-
Pressure
FULTON
Regulator
Spring Loaded
Weight Loaded
Pilot Loaded
Screwed end
Flanged 125 lb.
Max. Inlet Pressure 125 psi
Outlet Pressure Range
12" diaphragm ounces to 5 psi
8½" diaphragm 3 to 10 psi
Typical Flow Rate
5 psi inlet 12000 CFH
20 psi inlet 25000 CFH
50 psi inlet 48000 CFH
Model 461-S
Model 461-W or DW
Model 461-PG, PA, DWP
ACCURATE!
VERSATILE!
FOOLPROOF!
A compact self-contained economical regulator designed to satisfy 90% of your commercial and light industrial regulator requirements.
For distribution use, it steps up the pressure as the demand increases to deliver gas when you need it.
For safe, accurate regulation of large volume commercial or industrial services, use Model 461 as a monitor regulator with Model '1100' as the control regulator. Most of the parts interchange. Both are compact, accurate and versatile.
Bulletin 461 gives complete information
9316
ACCURATE
CF
MFG CO
DEPENDABLE
Chaplin-Fulton
MANUFACTURING COMPANY
Pittsburgh 33, Pennsylvania

## PRODUCT PARADE

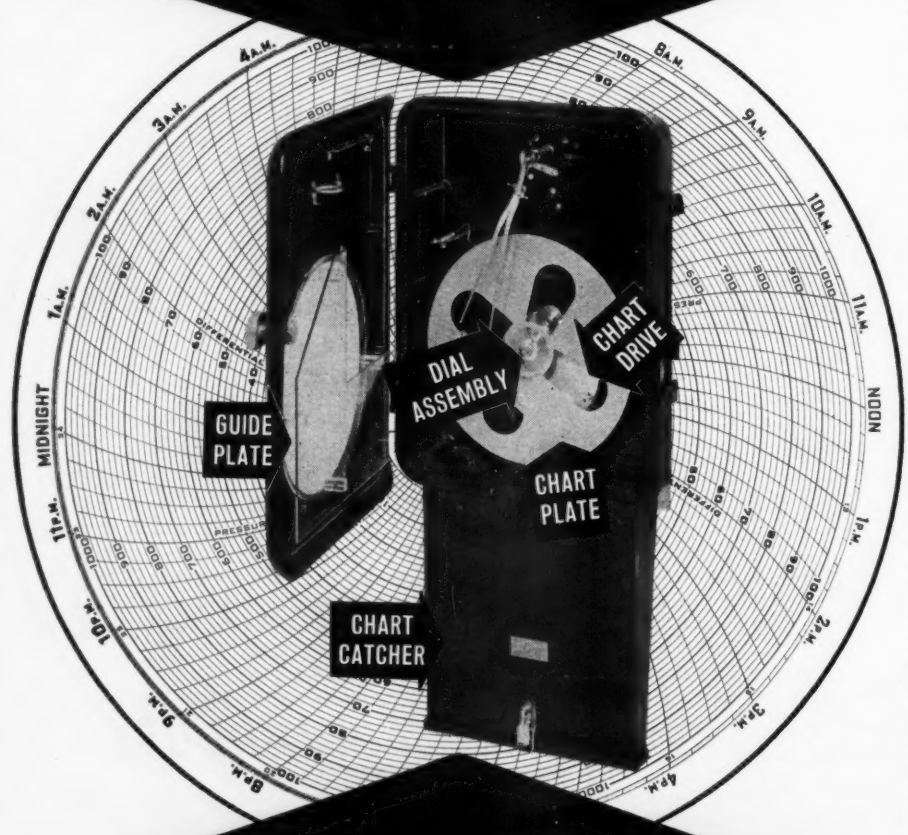
**Economical steel service tees** with a ¾-in. body and a choice of smooth, threaded, and compression outlets ranging from ¾ through 1¼-in. is currently available from Continental Industries. Tees are self-punching. Threaded into high strength steel body, the hardened punch not only taps the main but serves as shut-off valve as well. Tees are available with 3 types of bases — thermotap base, gas or arc-weld base, beveled for conventional welding, and the standard threaded base. **19**

**Pre-engineered metal buildings.** A new 16-page catalog describes Parkersburg's line of permanent metal buildings, uses illustrated table of contents to identify each of 4 principal types of buildings along with their structural features, applications, and standard accessories. Charts give detailed specifications of the four building lines. Separate sections on each building type are illustrated with photographs and line drawings showing applications, and structural and assembly features. All types are delivered ready to assemble with factory-fitted parts, without necessity of cutting, welding, or punching in the field. **20**

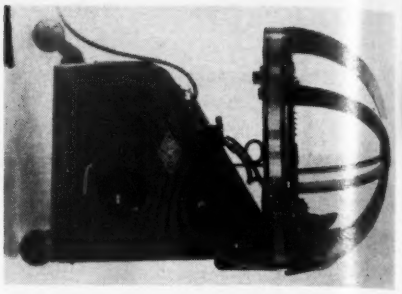
* * *

*Fellow to blonde at cocktail party: "May I join you?" "What's the matter?" she asked, "Am I coming apart?"*


*Automate your recorders with*
MULLINS
**Dial-O-Graph**
AUTOMATIC CHART CHANGER
*Easily installed on any make, model, or type of recorder . . . in your plant, in the field, or as original equipment.*




Dial-O-Graph converts any recording instrument to fully-automatic, so it operates completely unattended, with accuracy and dependability assured. Every recorder in a plant can be set to change charts at exactly the same time . . . at a few hours' or days' interval. Any standard circular chart can be used; the only modification is a single, keyhole-shaped slot in the center. All charts are slotted the same for all instruments and all change times • If you'd like to change charts at any time of the day or night, week or month—AUTOMATICALLY—write for information on Dial-O-Graph. Your inquiry will be handled promptly, and there's no obligation. Mullins Mfg. Co., Inc., 3311 West Davis, Dallas 11, Texas.

**Line-up clamp** . . . utilizing electro-hydraulic power . . . is being introduced by Work-Remco Co. Said to be only internal line-up clamp available that exerts high pressures (up to 4000 lb.) hydraulically on full 360 deg inside circumference of both ends of pipe to be welded. This completely eliminates spot pressure method of rounding pipe ends and also completely eliminates high-lows often produced by spot pressure method. Designed primarily for yard welding, new clamp can easily be converted for operation on main lines. Can be electrically operated from welding machine or from separate generator on tractor. Operator controls clamp through simple push button controls. Unit has copper back-up rings for double jointing, has large ball bearings, and hardened steel wheels. Plastic wheels are available for internally coated pipe. Available in 10 thru 36-in. sizes. **21**

**Loose dirt** in bottom of trench . . . a costly nuisance. . . is eliminated with crumber attachment for Davis T-66 self-propelled trencher backfiller. Crumber pushes loose dirt back into digging teeth for pickup. Loose dirt, including powder and sugar type sands, are lifted to ground level and an auger conveys it to the soil bank. A sweep blade attachment is also available to dress edge opposite spoil bank. **22**

**Bonnet-type gas filter** . . . said to completely remove all fine dust and scale from gas as it passes through the filter . . . is now available for gas pressures up to 125 psig. Maximum drop across filter is 10 psig. Filter, an inexpensive polyurethane cartridge, can be replaced by removing filter bonnet; body stays in the line. Two standard cast iron body sizes are available with ¾ and 1-in. IPS, threaded. **23**

**Detailed specifications** on Ledeen's Spanseal group of control and line valves are given in new bulletin. Control valves in the group are available for 1500 psi pneumatic and hydraulic service and minus 40 to plus 250 deg F temperature range. Line valves are available for 1200 psi pneumatic and hydraulic service and a similar temperature range. Control valves are made up of 3 elements — basic valve, manifold block, and operating attachments. The basic valves are available in 4-way, 3-way, 2-way, diverter and shuttle cycles. Line valve is a uni-directional shut-off valve with integral actuator available in straight shut-off cycle or as shut-off valve with downstream vent. Spanseal valves are said to feature bubble tight shut-off, small linear valve movement, adaptability to wide variety of pilot attachments, good throttling characteristics, chemical compatibility with natural gas, and mechanical compatibility with erosive actions of high pressure gases at high Reynold's flow. **24**